

Submission on Hutt City Proposed District Plan

Clause 6 of Schedule 1, Resource Management Act 1991

To: Chief Executive, Hutt City Council Via email to district.plan@huttcity.govt.nz.

1. This is a submission by Neha Punjabi on the Proposed Lower Hutt District Plan 2025 ("PDP").
2. My contact phone number is [REDACTED]. My email address for service is neha_gnd@yahoo.com.
3. I cannot gain an advantage in trade competition through this submission. I am directly affected by an effect of the subject matter of the submission that: (a) Adversely affects the environment, and (b) Does not relate to trade competition or the effects of trade competition.
4. The specific provisions of the proposal that my submission relates to are on natural hazards and zoning as well as any provisions that will or may apply to subdivision, development and land use at 30 Benmore Place.
5. I am concerned about the following :
 - My house(12A Ford Road, Manor Park) was built towards the end of 2023 and the **legitimate resource consent from the Hutt City Council (HCC)** was given sometime in Jan. 2023(PFA) to the best of my knowledge. How come just 2 years later, it is now considered in a **high natural hazard area**? I believe, the primary reason why it has been considered in a high natural hazard area is mainly due to the flooding hazard, isn't it? To the best of my knowledge, **ever since flood protection mitigation measures have been put in place, it is generally accepted by the community here that the flooding hazard has been contained /well managed which is probably the reason why the HCC provided approval for residential units here. I can even see some new units being developed by Friday Homes as soon as you enter Manor Park which gives me the impression that the HCC is still providing legitimate resource consents even today, so how come this is allowed if it's a high natural hazard area?**

Some limitations of scientific data used in PDP:

- (a) **Modelling** – data quality issues, overfitting, changing conditions, ethical concerns.
- (b) **GIS Thematic Spatial Maps for layering** – used spatial data primarily from observation than experimentation.
- (c) **Geo-tectonics** – data quality issues from changing dynamics of geology affecting accuracy of modelling & predictive estimate.

There are some mitigation measures requested from HCC during public hearing of PDP in late 2025 to help improve wellness & wellbeing / quality of life of residents living in the "high natural hazard area" of Manor Park which are:

- (a) Provide Wastewater Pumping Stations in collaboration with Wellington Water in appropriate site.
 - (b) Ensure zero tolerance to roadside general waste /debris clogging the existing roadside drainage inlets by implementing a strict cleaning routine of road sweeping & grass mowing bordering the road network (currently irregular/neglected).
 - (c) Regular monitoring /roadside checks on existing roadside & other drainage systems & make changes as how to improve the efficiency.
 - (d) In collaboration with Wellington Regional Council /Wellington Water, regular monitoring /checks on existing water drainage pipes in Belmont Catchment facing Manor Park. Proactively seeking funds to replace them with bigger pipes to efficiently help the flow, while wisely forward planning for frequent & erratic rainfall events from on-going climate change.
- The PDP does not include the most appropriate objectives, policies and rules / methods to manage the use, development, and protection of natural and physical resources in a way, or at a rate, that enables the existing Manor Park community to continue to provide for our social, economic, and cultural well-being and health and safety. More specifically, I seek that the PDP provisions be retained or amended as required to ensure that any subdivision, land use, and development at 30 Benmore Place occurs in a way that avoids adverse effects on the natural environment and the existing residential Manor Park community, including its people, property, the transport network and public spaces. I seek any further, alternative, necessary, or consequential relief as may be necessary to fully achieve the relief sought in this submission.
6. I wish to be heard in support of our submission.
 7. If others make a similar submission, we will consider presenting a joint case with them at the hearing.

RM number: RM220418
Date: 6 January 2023
Applicant: Justin Jones
Address: 452 Paremata Road, Porirua
Agent: Chetwin Land Surveying Ltd
Attention: Geoff Chetwin

Nancy Gomez
Environment and Sustainability
T 04 570 6666
Nancy.Gomez@huttcity.govt.nz
Our reference:RM220418

APPROVAL OF RESOURCE CONSENT FOR THE CONSTRUCTION OF THREE DEWLLINGS AND 3-LOT SUBDIVISION AT 12 FORD ROAD MANOR PARK (LOT 3 DP 20455)

Council granted consent for the following reasons:

- The reduced size of the lots will result in less than minor effects and proposed lots will be suitable for its intended residential use.
- A Council subdivision engineer assessed the proposal and concluded it can meet the necessary engineering standards, subject to the conditions shown below.
- Conditions imposed on the consent under section 108 and 220 of the Resource Management Act 1991 will control, mitigate and remedy any environment effects caused by the subdivision.
- Council considers the proposal to be consistent with section 106 of the same act.
- The property does not appear on Greater Wellington Regional Council's selected land use register as a contaminated site or as having been the site of a verified hazardous activity. As a result, Council considers the likelihood of earthworks uncovering contamination at the site to be negligible.
- The proposal is consistent with the policies and objectives of the city's District Plan.
- Council has given due regard to the New Zealand Coastal Policy Statement, any national, regional or proposed regional policy statement and any other regulations in reaching its decision. Council considers there are no other relevant matters that need to be dealt with.
- The proposal is consistent with the purposes and principles of Part 2 of the Resource Management Act 1991.

1. PROPOSAL

The applicant proposes the demolition of the existing dwelling and garage to allow the construction of three dwellings on the application site and subsequent 2-Lot subdivision with the following characteristics:

- **Lot 1** would be a front lot of 232m², and it would contain a two-storey dwelling with a footprint of approx. 76m² (total floor area 156.24m²).
The new dwelling will be 7.52m high and will contain three bedrooms.
The existing connection to Council's reticulated water, stormwater and wastewater will be removed and capped at the mains.
New water supply and sewer connections will be required for Lot 1.
Stormwater will be collected via 2000L tank and disposed to a soakpit.
Power and telecommunication connections will be provided.
Access to Lot 1 will be via a new shared vehicle crossing and right of way.
- **Lot 2** would be a middle lot of 194m², and it would contain a two-storey dwelling with a footprint of approx. 70m² (total floor area 144.76m²).
The new dwelling will be 7.52m high and will contain three bedrooms.
New water supply and sewer connections will be required for Lot 2.
Stormwater will be collected via 2000L tank and disposed to a soakpit.
Power and telecommunication connections will be provided.
Access to Lot 2 will be via a new shared vehicle crossing and right of way.
- **Lot 3** would be a rear lot of 225m², and it would contain a two-storey dwelling with a footprint of approx. 70m² (total floor area 144.76m²).
The new dwelling will be 7.52m high and will contain three bedrooms.
New water supply and sewer connections will be required for Lot 2.
Stormwater will be collected via 2000L tank and disposed to a soakpit.
Power and telecommunication connections will be provided.
Access to Lot 2 will be via a new shared vehicle crossing and right of way.

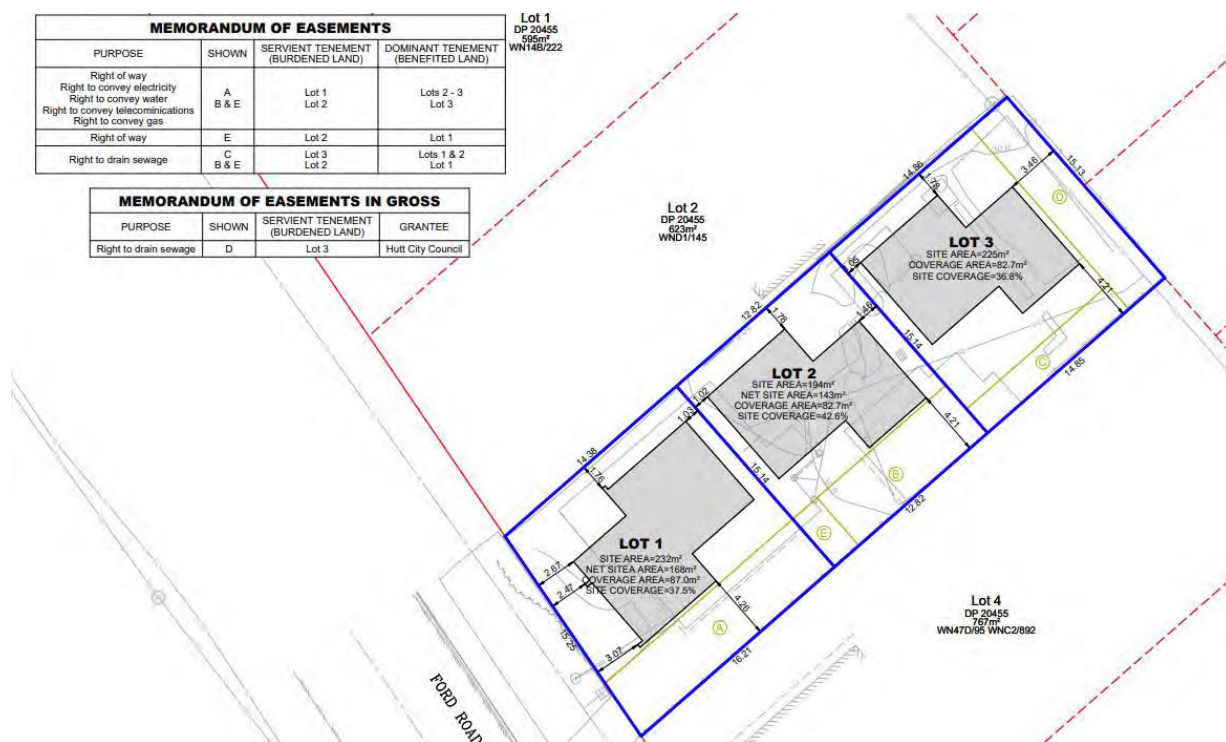


Figure 1 - Scheme plan of the proposal



Figure 2 - Artistic impression of the proposed dwellings

2. SITE DESCRIPTION

The site is located at 12 Ford Road in Manor Park, is legally described as Lot 3 DP 20455 and comprised in the Record of Title (RT) WND3/1368. The application site is 651m², is rectangular in shape and its contour is flat. There are no interests registered in the Record of title that will restrict Council's ability to process this resource consent application.

There is an existing dwelling built in 1967 located towards the front of the site, and there is also a detached garage located along the boundary shared with 10 Ford Road. Access to the application site is via a vehicle crossing located next to 10 Ford Road.

The landscape character of the existing surrounding environment consists of an established residential area with dwellings, accessory buildings and mature vegetation. Properties on Ford Street are of a mixture of land size and built form to the application site. Beyond the application site and adjacent properties, land is zoned General Residential, General Recreation and River Recreation.



Figure 3 - Application site and surrounding properties aerial view from HCC GIS Mapping



Figure 4 - Application site viewed from the road



Figure 5 - Existing vehicle crossing

3. RELEVANT PLANNING RULES AND REGULATIONS

District Plan

The Lower Hutt District Plan is the appropriate planning instrument with which to assess the proposal. The application site is located in the General Residential area of the Operative District Plan.

The proposal activity classification is determined under the District Plan by assessing its compliance with the relevant standards, rules, and conditions. Subdivisions standards and terms are set out in Chapter 11. In addition to the standards and terms in Chapter 11, the proposed dwellings must also comply with all relevant development standards in Chapter 4 and Chapter 14.

On 18 August 2022, the Hutt City Council notified for submissions the proposed Plan Change 56 (PC56). PC56 incorporates new planning rules for higher and denser housing allowing housing up to three storeys high and three dwellings per section in most residential areas, without requiring resource consent.

The application site is zoned High Density Residential under PC56. Some provisions of PC56 take immediate legal effect from 18 August 2022, and this application is subject to those provisions in Chapter 4G. The following table summarises the rules from the District Plan and rules where modified by Chapter 4G of PC56 that take immediate legal effect considered to be relevant to this application and whether the proposal complies with these.

Rule/Condition		Compliance
Rule 11.2.2.1 – Standards & Terms for Controlled Subdivisions in the Medium Density Residential area		
11.2.2.1 (a)	Minimum size of allotment – 400m ² or no minimum size required if it can be demonstrated that it is practicable to construct on all allotments, as a permitted activity, a dwelling which complies with all relevant General Residential Development Standards specified in 4A 4.2.	Does not comply – it has not been demonstrated that dwellings comply with the standards specified in 4A 4.2 Lot 1 – 232m ² area Lot 2 – 194m ² area Lot 3 – 225m ² area
11.2.2.1 (a)	Minimum frontage – 3m to ensure that there is drive-on access to the lot. For rear allotments the 3m frontage may be satisfied through a registered Right of Way outside the title (outside legal boundaries of the allotment)	Complies – Lot 1 is a front lot with a 15.25m frontage. Lots 2 & 3 are rear lots that will have a 4.2m wide right of way as frontage.
11.2.2.1 (a)	Shape factor – a rectangle measuring 10m by 15m or no shape factor required if it can be demonstrated that it is practicable to construct on all allotments, as a permitted activity, a dwelling which complies with all relevant General Residential Development Standards specified in 4A 4.2.	Does not comply – it has not been demonstrated that dwellings comply with the standards specified in 4A 4.2 Lot 1 – approx. 11m x 14m Lot 2 – approx. 11m x 13m Lot 3 – approx. 11m x 13m
11.2.2.1 (b)(i)	Access – Transport standards in Chapter 14	Complies – see Rule 14A 5.1 below
11.2.2.1 (b)(iv)	Stormwater	Can comply – A condition will be imposed for this
11.2.2.1 (b)(v)	Wastewater	Can comply – A condition will be imposed for this

11.2.2.1 (b)(vi)	Water supply	Can comply – A condition will be imposed for this
11.2.2.1 (b)(vii)	Telecommunications & Electricity	Can comply – A condition will be imposed for this
11.2.2.1 (e)	Earthworks standards in Chapter 14	Complies – see Rule 14I 2.1.1 below
11.2.2.1 (f)(i)	Financial contributions in Chapter 12	Can comply – A condition will be imposed for this
Operative District Plan Rule 4A 4.2 (or Plan Change 56 Rule 4G 2.2 where applicable) – Development Standards in Medium Density Residential area		
4G 4.2.1 (a)	Up to three dwellings per site	Complies – Three dwellings are proposed prior subdivision.
4G 4.2.2 (a) (replaces 4A 4.2.2 (a))	Maximum building coverage – 50%	Complies – Lot 1 – 37.6% site coverage Lot 2 – 42.6% site coverage Lot 3 – 37% site coverage
4A 4.2.3 (a)	Maximum height – 8m	Complies – The proposed dwellings will have a maximum height of 7.52m
4G 4.2.4 (a) (replaces 4A 4.2.4 (a))	Height in relation to boundary – from all site boundaries 4m + 60° This standard does not apply to a boundary with a road or proposed internal boundaries within a site.	Complies – the proposed dwellings will not breach the recession planes
4A 4.2.5 (a)	Minimum yards: Front yard 3m All other yards 1m	Does not comply – The proposed dwelling on Lot 1 will be 2.47m from the road boundary.
4A 4.2.6 (a)	Permeable surface - minimum 30%	Complies – Lot 1 – 37.5% permeable Lot 2 – 30.5% permeable Lot 3 – 31% permeable
4G 4.2.8 (a) (replaces 4A 4.2.7 (a))	Outdoor living space – minimum area of 20m ² and dimension of 3m	Complies – Lot 1 – 20m ² & 4m dimension Lot 2 – 20m ² & 4.4m dimension Lot 3 – 20m ² & 4.4m dimension
4A 4.2.11 (a)	Demolition	Complies – The demolition of the existing dwelling is permitted
4A 4.2.12 (a)	Stormwater retention	Does not comply – no retention tanks proposed. Stormwater will be disposed on-site via soak pits
4G 4.2.13 (a)	Outlook space per unit – Principal living room with minimum 4m in depth and 4m in width All other habitable rooms with minimum 1m in depth and 1m in width	Complies – Each dwelling will have complying outlook space
4G 4.2.14 (a)	Windows to street – residential units facing the street with a minimum of 20% of the street facing façade in glazing in the form of windows or doors	Complies – The proposed dwelling on Lot 1 will have complying glazing
4G 4.2.14 (a)	Landscaped area – minimum 20%	Does not comply – Lot 1 – 20% landscaped Lot 2 – 16% landscaped Lot 3 – 27% landscaped Non-compliance with this rule will not trigger consent at this stage.
Chapter 14 Rules – Permitted Activities Standards in all areas		

Rule 14A 5.1	Appendix Transport 1 standards Appendix Transport 2 – High trip generator threshold	Complies – The proposal includes an accessway with a legal width of 4.2m and 3m formation. There will be one vehicle crossing which will not exceed 50% of the road frontage and over 1m separation from adjoining vehicle crossings. Sufficient manoeuvring area is provided. The proposal is not a high trip generator.
Rule 14I 2.1.1	Earthworks: (a) Ground level not altered by more than 1.2m (b) Maximum volume 50m ³	Complies – The earthworks to install services and foundations will not exceed the permitted activity standard.

The proposal triggers the District Plan non-compliances mentioned in the table above, and will require resource consent for the following:

- The proposed subdivision does not comply with the standard for controlled activity set out in Rule 11.2.2.1, relating to the allotment design (minimum size of allotment and shape factor). The proposed subdivision will be assessed as a discretionary activity under **Rule 11.2.4(i)**.
- The proposed dwelling on Lot 1 does not comply with the permitted standard for front yard set out in Rule 4A 4.2.5. This breach is assessed as a restricted discretionary activity in accordance with **Rule 4A 4.2.5(b)**.
- The proposed dwellings do not comply with the permitted standard for stormwater retention set out in Rule 4A 4.2.5. This breach is assessed as a restricted discretionary activity in accordance with **Rule 4A 4.2.12(b)**.

While it is acknowledged that the proposed dwellings will not comply with the minimum landscaped area provision introduced under PC56, it is noted that this particular provision has no current rule to require consent at this time.

Overall Application Status

I consider the subdivision component of the proposal to be **discretionary** under Rule 11.2.4(i); and the land use component to be **restricted discretionary** under Rule 4A 4.2.4(b), Rule 4A 4.2.5(b) and Rule 4A 4.2.12(b).

National Environmental Standards (NES)

There is no NES applicable to this proposal. Therefore, the proposal does not require assessment under any NES.

4. PERMITTED BASELINE

Minor boundary adjustments are identified as a permitted type of subdivision provided that the permitted activity conditions can be met and no additional allotments are created. The District Plan does not allow subdivision (other than boundary adjustments) as a permitted activity, so there is no subdivision permitted baseline.

Whilst there is no permitted baseline relevant for subdivisions that create new lots, in this case there is a permitted baseline that can be considered relevant to this proposal in regards to the location and built form of the dwellings and associated structures. A relevant permitted baseline in this case would be a development form that adheres to permitted activity standards outlined in Chapters 4A, 4G and 14 where relevant as identified in the rules assessment above.

5. NOTIFICATION ASSESSMENT

Council must assess any resource consent application under section 95 of the Resource Management Act 1991 to determine whether a resource consent application should be notified. The Resource Management Act 1991 details a four step process that must be followed, and triggers or precludes notification of applications in certain circumstances. The sections below follow the four step process for public notification (under section 95A) and limited notification (under section 95E).

5.1 - PUBLIC NOTIFICATION STEPS – SECTION 95A

Pursuant to section 95A of the Resource Management Act, this section follows the 4 step process to determine if public notification is required.

Step 1 - Public notification is mandatory in certain circumstances

Public notification is mandatory in certain circumstances.

Has the applicant requested public notification?	No
Is public notification required under s95C?	No
Is the application made jointly with an application to exchange recreation reserve land under s15AA of the Reserves Act?	No

The applicant has not requested public notification of the application, the application was not made jointly with an application to exchange recreation reserve land, and further information was requested and responded by the applicant.

Public notification is not mandatory under step 1

Step 2 - Public notification is precluded in certain circumstances

If public notification is not required under step 1 it may be precluded in certain circumstances (unless special circumstances apply under step 4).

Are all activities in the application subject to a rule in a Plan or National Environmental Standard precluding public notification?	No
Is the application for one or more of the following (but no other) activities? <ul style="list-style-type: none"> ▪ A controlled activity ▪ A boundary activity with a restricted discretionary, discretionary or non-complying activity status 	No

The proposal is for a discretionary activity that is not a boundary activity, and it is not excluded from public notification.

Public notification is not precluded under step 2.

Step 3 - Public notification is required in certain circumstances

If public notification is not precluded under step 2, public notification may be required in certain circumstances.

Is any activity in the application subject to a rule in a Plan or National Environmental Standard that requires public notification?	No
Does the activity have, or is likely to have, adverse environmental effects that are more than minor in accordance with s95D?	No (see assessment below)

Does the activity have, or is likely to have, adverse environmental effects that are more than minor in accordance with s95D?

Public notification may be required under step 3 if the Council determines that the proposed activity is likely to have adverse effects on the environment that are more than minor in accordance with s95D. To decide whether adverse effects on the environment are minor, more than minor or less than minor, the Council:

- a) Must disregard any effect on a person who owns or occupy land in which the activity will occur, and must disregard any effect on a person who owns or occupy land adjacent to the application site. Adjacent land includes:
 - 9, 10, 11, 13 & 14 Ford Road
 - 10 & 12 The Square
- b) Must disregard any effect on a person who has given written approval to the proposal. No written approvals were provided with this application.
- c) Must disregard trade competition and the effects of trade competition. There is no trade competition associated with this application.

It is considered that the proposal is not likely to have adverse effects on the environment that are more than minor beyond the adjacent land, for the following reasons;

- The reduced size of the lots will result in less than minor effects due to the dwellings being of similar density to a permitted land use and the proposed lots will be suitable for its intended residential use.
- Any adverse construction related effects arising from the proposal will be generally comparable to those associated with the development of the site in accordance with the permitted baseline, and as such, will be acceptable.
- The proposed lots are not known to be particularly subject to subsidence, inundation, erosion, falling debris or slippage.
- The dwelling on Lot 1 with a front yard infringement will not be out of character and will retain the streetscape and amenity of the area.
- The proposed dwellings will not encroach any rear or side yards relating to adjoining properties.
- Each lot provides sufficient permeable surface with good ground soakage for stormwater and the installation of soakpits is accepted by the Council's Development Engineer.
- Stormwater runoff from impervious areas will be collected and disposed of within the boundaries of the lot and the proposal is not anticipated to increase ponding to neighbouring properties.

Public notification is not required under step 3.

Step 4 – Public notification is required in special circumstances

If public notification is not required under step 3 it may still be warranted where there are special circumstances.

Do special circumstances exist that warrant public notification?	No
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Special circumstances are those that are: exceptional or unusual, outside the common run of applications of this nature or circumstances which makes notification desirable.

The proposal relates to the demolition of existing buildings and the construction of dwellings on the application site within a high density residential area, and subsequent subdivision. In this instance, it is concluded that there's nothing exceptional about this application, and that the proposal has nothing out of the ordinary to suggest that public notification should occur.

On this basis, it is not considered necessary to publicly notify the application due to special circumstances.

Conclusion

Having regard to the four steps outlined above within Section 95A, it is considered that public notification of this application is not required.

5.2 - LIMITED NOTIFICATION STEPS - SECTION 95B

If the application is not to be publicly notified, Council must determine if there are any persons adversely affected, and if it so give limited notification of the application.

As determined in section 5.1, public notification is not required. Pursuant to section 95B of the Resource Management Act, a 4 step process must therefore be followed to determine if limited notification is required.

Step 1 – Certain affected groups/persons must be notified

Limited notification is mandatory for certain groups/persons.

Are there affected customary rights groups?	No
Are there affected customary marine title groups (for accommodated activities)?	No
Is the proposal on or adjacent to, or may affect, land that is subject to a statutory acknowledgement and whether the person to whom the statutory acknowledgement is made affected under section 95E?	No

There are no customary rights or marine title groups affected by the application. The application site is not on or adjacent land subject to statutory acknowledgement, and the proposal is unlikely to affect land subject to statutory acknowledgement.

Limited notification is not required under step 1.

Step 2 – Limited notification is precluded in certain circumstances

Limited notification to any other persons not referenced in step 1 is precluded in certain circumstances (unless special circumstances apply under step 4).

Are all activities in the application subject to a rule in a Plan or National Environmental Standard precluding limited notification?	No
Is the application for the following, but no other activity: ▪ A controlled activity (other than a subdivision) under the District Plan	No

The proposal in this application are not excluded from limited notification.
Limited notification is not precluded under step 2.

Step 3 – Certain other persons must be notified

If limited notification is not precluded under step 2, limited notification is required for any persons found affected under s95E.

Are any of the following persons 'affected' under s95E? ▪ For 'boundary activities' an owner of an allotment with an 'infringed boundary'	No
For all other activities, are there any affected persons in accordance with s95E?	No (see below assessment)

In accordance with s95E are there any affected persons?

Section 95E(3)(a) stipulates that those individuals who give written approval to a proposal cannot be considered to be an affected person/s. No persons have given written approval.



Figure 6 - Adjacent land which could be potentially affected properties shaded blue

In accordance with section 95E, I consider there to be no affected persons as the potential environmental effects will be less than minor for the following reasons:

▪ *10 & 14 Ford Road*

These properties are located to the south and north (respectively) of the application site. There are no proposed non-compliances pertaining to any boundary shared with these properties. The front yard encroachment of the dwelling on Lot 1 will be partially visible from these properties due to the mature trees and fencing treatment along the side boundaries. The proposed dwellings comply with the required setback and height in relation of boundary from these properties and will not cause adverse effects on the owner/occupiers of these properties over and above of those generated by a development on the application site that adheres to permitted activity standards.

▪ *9, 11 & 13 Ford Road*

These properties are located across the road from the application site and the front yard encroachment of the dwelling on Lot 1 will not be discernible from these properties. The proposal is well separated from these properties and will not cause adverse effects on the owner/occupiers of these properties over and above of those generated by a development on the application site that adheres to permitted activity standards.

▪ *10 & 12 The Square*

These properties are located at the rear to the west of the application site. There are no proposed non-compliances pertaining to any boundary shared with these properties. The proposed dwellings comply with the required setback and height in relation of boundary from these properties and will not cause adverse effects on the owner/occupiers of these properties over and above of those generated by a development on the application site that adheres to permitted activity standards.

▪ *All other persons*

Beyond the application site and the properties mentioned above, there are no other persons considered potentially affected due to the separation distance of other properties from the proposal.

Limited notification is not required under step 3.

Step 4 – Limited notification is required under special circumstances

If limited notification is not required under step 3, limited notification may still be warranted where there are special circumstances.

Do special circumstances exist that warrant notification of any persons to whom limited notification would otherwise be precluded?	No
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I do not consider there to be any special circumstances that warrant limited notification of this proposal to any person.

Conclusion

Having regard to the four steps outlined above within Section 95B, it is considered that limited notification of this application is not required.

5.3 - NOTIFICATION DECISION

As public notification is not required and there are no affected parties to limited notify, the application can be processed on a non-notified basis.

6. DETERMINING THE APPLICATION

Section 104 requires, when considering a resource consent application, that Council must, subject to Part 2, have regard to any actual or potential effects on the environment; any measure agreed or proposed by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any negative effects; any relevant provisions of a National Environmental Standard; other regulations; a National Policy Statement; a New Zealand Coastal Policy Statement; a Regional Policy Statement or proposed Regional Policy Statement; a plan or proposed plan; and any other matter the consent authority considers relevant and reasonably necessary to determine the application.

Section 104B relates to the determination of applications for **Discretionary Activities** and requires that:

- After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority –*
- (a) may grant or refuse the application; and*
 - (b) if it grants the application, may impose conditions under section 108.*

As the proposal is to be assessed as a discretionary activity, the Council retains full discretion and there are no restrictions on the matters to which Council can consider in determining this application. However, guidance is provided in the assessment criteria and assessment matters for discretionary activities set out in the District Plan. These are relevant discretion required to be used when assessing this resource consent application and are outlined in section 6.1 below.

6.1 - ASSESSMENT OF ACTUAL OR POTENTIAL EFFECTS ON THE ENVIRONMENT UNDER S104(1)(A)

The District Plan contains assessment criteria for Discretionary Activities in Rule 11.2.4.1 to offer guidance towards considering specified environmental effects or issues, and required to be used when assessing applications for a discretionary activity subdivision. In addition, Council has restricted its discretion as set out in Rule 4A 4.2.5(b) and Rule 4A 4.2.12(b) for front yard and stormwater retention non-compliance.

11.2.4.1 Assessment Criteria for Discretionary Activity subdivision:

- (a) The matters contained in sections 104 and 105, and in Part II of the Act shall apply.*
- (b) Compliance with the engineering design standards.*
- (c) The degree of compliance or noncompliance with any relevant Permitted and Controlled Activity Standards and Terms.*
- (d) Those matters listed in the Assessment Criteria for Controlled Activities (Refer to Rule 11.2.2.3)*

11.2.2.3 Assessment Criteria for Controlled Activity subdivision:

- *Allotment design*
- *Engineering Design*
- *Contamination*
- *Esplanade Reserves, Strips and Access Strips*

4A 4.2.5(b) Matters of Discretion for yards is restricted to:

- (i) The effects on the privacy of adjoining sites*
- (ii) The effects on the amenity of the surrounding residential area, the streetscape and adjoining public space*

When addressing or assessing potential effects in relation to matters above, applicants and the Council can be informed by the relevant outcomes identified in the Medium Density Design Guide

4A 4.2.12(b) Matters of Discretion for stormwater retention:

- (i) The effects on the stormwater system*
- (jj) The potential for increased surface ponding and flooding*
- (iii) Mitigation of additional stormwater runoff through other means*

Allotment & Engineering Design

Lots 1, 2 and 3 will be 232m², 194m² and 225m² respectively. Despite Lots being smaller in size than the surrounding properties and smaller than the minimum lot size of 400m², the allotments have been designed for the dwellings to comply with the development standards (with the exception of Lot 1 with a minor front yard encroachment and the provision of soakpits instead of stormwater retention tanks). Further, the allotment design remains residential in nature and lots will be of size that the proposed dwellings can be sufficiently separated from other surrounding dwellings. A condition of consent will be imposed to ensure the dwellings are constructed as proposed on the proposed small lots.

The proposed dwellings are consistent with the density anticipated in the District Plan and PC546, since up to three dwellings can be accommodated as a permitted activity on the application site without subdividing. The internal fences as a result of the subdivision will not be discernible from the road, and it would be no different to any permitted internal fences between three dwellings on an unsubdivided site.

Taking into consideration the reasons mentioned above and the permitted baseline on the application site, it is considered that the reduced size of the lots will result in less than minor effects and proposed lots will be suitable for its intended residential use.

The existing vehicle crossing next to 10 Ford Road will be widened and constructed to Council's standards. The proposed Lots will share the new vehicle crossing and accessway. Each lot will have separate service connections and separate soakpits. Separate underground connections will also be provided for each Lot. The application has been reviewed by Council's development engineer who considers the proposed subdivision acceptable subject to consent conditions to ensure compliance with the relevant engineering and servicing requirements.

Given the above, it is considered that any potential adverse effects related to servicing the development will be less than minor and the provision of services will be adequately managed by the conditions imposed.

Construction and Earthworks Effects

The proposal will not exceed the earthworks permitted standards, however the construction and any earthworks associated with the proposal will generate some temporary effects

including noise and additional traffic, in addition for potential dust and sedimentation effects. In order to mitigate any adverse construction effects, the applicant will implement sediment and control measures for the duration of the site development works as necessary, and will comply with the New Zealand standard relating to construction noise. Conditions of consent will be imposed for these.

Construction effects associated with residential development are anticipated within residential areas and are a necessary element of development. In addition, the District Plan allows for some additional noise during such times in accordance with NZS 6803P "Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work". Any potential construction effects such as noise and traffic are likely to be short in duration (temporary) and limited to the construction phase of the proposal. It is considered that any adverse construction related effects arising from the proposal will be generally comparable to those associated with the development of the site in accordance with the permitted baseline, and as such, will be acceptable.

Esplanade Reserves, Strips and Access Strips

The proposed subdivision is not adjacent to any waterbody. Therefore, the provision for esplanade reserves and/or strips along the margin of a water body do not apply in this case.

Contamination

It is our understanding that no previous activities on the application site or surrounding properties are identified on the Ministry for the Environment as Hazardous Activities and Industries List (HAIL) and it is not identified by the Greater Wellington Regional Council as a hazardous site. Therefore, the application site is not considered to be contaminated site.

Protection of Significant Sites

The application site is not situated within a Significant Cultural or Archaeological Resource as identified within the City of Lower Hutt District Plan and does not contain any identified heritage sites or Significant Natural Resources. Therefore, any potential effects associated with this proposal in relation to the protection of significant natural, heritage, cultural or archaeological sites are considered to be less than minor.

Natural hazards

The proposed lots are not known to be particularly subject to subsidence, inundation, erosion, falling debris or slippage. Greater Wellington Regional Council confirmed that this property lies outside the flood hazard from the Hutt River in a 1% Annual Exceedance Probability (AEP) flood event. Therefore, the proposal is unlikely to increase the vulnerability of people or their property to natural hazards.

Section 108 & 220 of the Resource Management Act 1991

Section 108 of the RMA allows for conditions to be imposed. Standard conditions of consent for this type of activity are recommended. These conditions are imposed to ensure that the proposed subdivision is undertaken in accordance with the information provided with the application, and to mitigate any potential adverse effects on the environment. Section 220 is relevant in this case, since there are consent notice conditions that lot owners would need to be aware of and comply with on an ongoing basis.

Streetscape and Residential Amenity Effects

The proposed dwelling on Lot 1 will be approximately 2.47m from the road boundary. This is a 0.53m front yard encroachment which is unlikely to impact the surrounding environment given the small encroachment is due to the façade column. Further, this dwelling will have similar location infringement to other dwellings in this area (e.g. 2 Gold Road, 16 & 19 Ford Road, 28, 30, 32, 34 & 38 Manor Park Road and 4, 5 & 12 Martha Turnell Crescent) that have front yard breaches ranging from 0.1m to 1.6m. Therefore, the dwelling on Lot 1 with a front yard infringement will not be out of character and will retain the streetscape and amenity of the area.

Privacy and Shading Effects

The proposed dwellings will not encroach any rear or side yards relating to adjoining properties. Any associated privacy and shading effect, as a result of the proposed dwellings, is considered to be similar to what could result in association with permitted dwellings and therefore considered acceptable.

Stormwater Effects

Whilst water retention tanks will not be installed for each dwelling, the applicant is proposing the installation on soakpits instead. Each lot provides sufficient permeable surface with good ground soakage for stormwater which is accepted by the Council's Development Engineer. Because of these factors the effect on the stormwater network and increased ponding and overland flows as a result of the proposed dwellings will be acceptable and will not lead to adverse environmental effects.

Conclusion

I consider that the activity will not have or be likely to have adverse effects on the environment that are more than minor beyond the application site and adjacent land.

6.2 - ASSESSMENT OF THE RELEVANT PROVISIONS OF THE DISTRICT PLAN UNDER S104(1)(B)

Objectives and policies of the District Plan

The District Plan has a number of objectives and policies that require consideration in assessing an application. The Objectives and Policies of the District Plan seek to ensure that activities are undertaken in locations and in a way that protects the character and amenity of the zoning and avoids adverse effects on the surrounding environment. The following are most relevant to this application:

Operative District Plan

- **Objectives 4A 2.3 & 4A 2.4**
- **Policies 4A 3.1, 4A 3.2, 4A 3.4, 4A 3.6 & 4A 3.7**

- **Objective 11.1.1**
- **Policy 11.1.1**

- **Objective 14I 1.1**
- **Policy 14I 1.1**

Proposed Plan Change 56

- **Objectives 4G 2.2, 4G 2.4, 4G 2.5 & 4G 2.6**
- **Policies 4G 3.1, 4G 3.2, 4G 3.4, 4G 3.5, 4G 3.6, 4G 3.7, 4G 3.8, 4G 3.9, 4G 3.10, 4G 3.12, 4G 3.13 & 4G 3.14**

For the full text of the above objectives and policies, please refer to the Lower Hutt District Plan.

It is considered that the proposal is generally consistent with the objectives and policies relevant to the application, and mentioned above, in that:

- The proposal is compatible with the level of development expected for this high density residential area, and it will not impact the amenity value of this residential area
- The proposal provides for a smaller residential Lot and adds to the density and housing choice
- The proposal is designed to maximise outdoor space, sunlight access, privacy and minimise overlooking and shading on the application site and adjacent properties
- The proposal will not adversely affect the streetscape, public spaces, or amenity of surrounding environment
- The proposal will allow the construction of modern dwellings, and will allow the application site to continue being used for residential purposes.

As assessed in section 6.1 of this report, the adverse effects of the proposal will be less than minor subject to compliance with conditions, and it is considered that the proposal is consistent with District Plan Objectives and Policies.

6.3 - ASSESSMENT OF THE RELEVANT PROVISIONS OF OTHER STATUTORY PLANNING DOCUMENTS UNDER S104(1)(B)

I consider that the National Policy Statement on Urban Development (NPSUD) is relevant to this application. The NPSUD came into effect on 20 August 2020, replacing the National Policy Statement on Urban Development Capacity 2016. The NPSUD sets out the objectives and policies for planning for well-functioning urban environments under the Resource Management Act 1991, and incorporates amendments made by section 77S(1) of the Resource Management Act 1991 (as inserted by the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021). It also incorporates amendments made by the Minister for the Environment under section 53(2) of the Resource Management Act 1991 and notified in the New Zealand Gazette on 11 May 2022 as the National Policy Statement on Urban Development 2020 Amendment No 1 (Notice ID: 2022-go1767).

This document also sets a mandate for Local Authorities to improve housing affordability and provide for the development of a variety of homes which meet the needs (in terms of price, location and typology) of various population groups. This is to be done by planning decisions, with the intent that housing density and supply is increased over time. These changes will legally be incorporated into our District Plan as a Plan Change 56 (PC56). PC56 was released for public submissions on 18 August 2022 and will go through a streamlined plan change process.

The proposal includes the construction of three dwellings on a suburban site within an existing urbanised area that it is well serviced by existing infrastructure. The proposal realises the development capacity of urban land in Manor Park while still maintaining the existing residential amenity of the area, the construction of the dwellings is an efficient use of the site that will enable well-functioning urban environments and will increase the capacity and variety of housing supply in the city, while enabling a type of home that meets the needs of the applicant limiting possible adverse impacts on adjacent sites, which in turn will provide for the social, economic, and cultural wellbeing, and health and safety of the current owner and any subsequent owner.

I consider that there are no other relevant provisions of national environmental standard, other regulations, national policy statement, New Zealand Coastal Policy Statement or regional policy statement or proposed regional policy statement that regard must be had.

6.4 – PURSUANT TO S104(1)(C) ARE THERE ANY OTHER MATTERS RELEVANT AND REASONABLY NECESSARY TO DETERMINE THE APPLICATION?

I consider there are no other matters relevant and reasonably necessary to determine the application.

6.5 - PART 2 OF THE RESOURCE MANAGEMENT ACT

I consider the proposal meets Part 2 matters of the Resource Management Act 1991.

6.6 - IN ACCORDANCE WITH S106 A CONSENT AUTHORITY MAY REFUSE SUBDIVISION CONSENT IN CERTAIN CIRCUMSTANCES

A consent authority may refuse subdivision consent or may grant a subdivision consent subject to conditions if it considers that there is significant risk from natural hazards or sufficient provision has not been made for legal and physical access to each allotment to be created by the subdivision.

The proposed lots are not known to be particularly subject to subsidence, inundation, erosion, falling debris or slippage. Greater Wellington Regional Council confirmed that this property lies outside the flood hazard from the Hutt River in a 1% Annual Exceedance Probability (AEP) flood event. As such there are no minimum floor height requirements for Hutt River flood hazard for this property. Therefore, the proposal is unlikely to increase the vulnerability of people or their property to natural hazards.

The proposed lots will have adequate legal and physical access from the road, as shown on the scheme plan submitted.

It is considered that the proposed subdivision does not need to be declined pursuant to Section 106 of the RMA.

6.7 - SUBSTANTIVE DECISION

Land use

In accordance with section 104C, I have considered those matters over which discretion is restricted in a national environmental standard or other regulations or plan or proposed plan and have decided to grant the application subject to conditions under s108 relating to those matters over which discretion is restricted.

Subdivision

In accordance with s104B I have considered the application for a discretionary activity and have decided to grant the application subject to conditions under s108 and s220.

7. CONDITIONS OF RESOURCE CONSENT

In accordance with s108 and s220 of the Resource Management Act, resource consent has been granted subject to the following conditions, which have been agreed by the applicant:

General Conditions (Land use & Subdivision)

1. That the proposal is carried out substantially in accordance with the information and approved plans submitted with the application and held on file at Council (except where modified by conditions of consent), being:
 - Subdivision scheme plans (Job# J22042, sheets S10001 to S10005) prepared by Chetwin Land Surveying, dated 15/07/2022
 - Architectural Plans (Proj# J1128, sheets RC01 to RC12) prepared by Moore Design dated 6/12/2022
 - Soakage Test Reports (Lot 1, Lot 2 & 3) prepared by Soakage Test Services Ltd, dated 13/10/2022
2. That the consent holder advises Council (enforcement@huttcity.govt.nz or 04 560 1044) at least two working days before any work starts on site; and that the consent holder also supplies the name, phone number and address of the main contractor and, if applicable, the same details for the earthworks company.

Important notes:

- *When given notice of a start date, a compliance officer will suggest an on-site meeting to run through a checklist of things to make sure the project runs as smoothly as possible. This service is included in the resource consent application fee. Using it could avoid difficulties later on. Please note that additional monitoring visits will be charged at \$180 per hour.*
 - *Notification of work commencing is separate to arranging building inspections.*
3. The consent holder must establish the condition of any existing wastewater and/or stormwater drains to be reused, by way of CCTV inspection. A copy of the CCTV inspection—record and its report are to be submitted by email to Council (subdivision@huttcity.govt.nz) for review prior to construction works.
 4. That prior to the commencement of physical works the consent holder submits detailed engineering plans to Councils development engineering team via subdivision@huttcity.co.nz showing the layout of proposed services and vehicle access including any earthworks and landscaping plans, and receives certification. The information shall include plans, specifications, and all necessary design and construction

documentation. All work is to be carried out substantially in accordance with the approved plan(s).

5. That the consent holder shall undertake all construction so that no sediment leaves the site or enters any drainage system or the stormwater system; and that the consent holder installs and maintains sediment control measures in compliance with Greater Wellington Regional Council's Erosion and Sediment Control Guide for Land Disturbing Activities in the Wellington Region (Feb. 2021) and any erosion and sediment control plan or earthworks construction management plan.
6. That the consent holder ensures all construction works including any earthworks are carried out in a manner that prevents dust travelling beyond site boundaries to the extent that it does cause nuisance and hazard.
7. That the consent holder ensures vehicles and machinery leaving the site do not deposit earth or other material in or on road reserve or otherwise damage road surfaces and surrounds; if such spills or damage occurs, the consent holder shall clean or repair road surfaces to their original condition immediately and avoid discharge of any material into the stormwater system.
8. That the consent holder ensures all development and construction work complies with the provisions of NZS 6803:1999 Acoustics - Construction noise; and that notwithstanding this standard, machinery operating hours, including machinery start-up times, are limited to between 7:30am and 6pm Monday to Saturday, with no work on Sundays or public holidays.

Section 223 Conditions

9. That the consent holder provides appropriate easements for private services, right of way and easements in gross where necessary, with the easements shown as a memorandum of easement on the land transfer title plan.

Section 224 Conditions

10. That the consent holder provides stormwater, sewer and water reticulation services designed and constructed in accordance with the detailed engineering plans approved and in accordance with Wellington Waters Regional Standard for Water Services 2021 and the Regional Specification for Water Services 2021 and all associated amendments.

Important note: *As per the Wellington Regional Standards for Water Services 2021, an existing sewer or stormwater lateral that is less than 25 years old can be used for a new dwelling or new vacant lot, otherwise they are to be renewed or sealed off at the mains if not replaced in the same location. These documents are available on the following website <https://wellingtonwater.co.nz/contractors/technical-information>*

11. If on considering the CCTV record Council is satisfied that the condition of the existing wastewater and/or stormwater drains within the site is not acceptable, then the consent holder at their own cost must upgrade or construct a new drain, or section of drain, as directed by and to the satisfaction of the Hutt City Development Engineering Team and carried out at the full cost of the consent holder.

12. That the consent holder severs all abandoned cross-boundary services, including any water, sewer and stormwater pipes. Abandoned pipes within the property are to be sealed at the junction. In addition, where abandoned pipes have the potential to act as a cross-boundary field drain they are to be sealed at the boundaries. Abandoned property laterals (connections from the main or kerb) are to be severed and sealed at the main or kerb.
13. The consent holder must apply for new water connections at the customer services counter of Council Building, 30 Laings Road, Lower Hutt. Applications are processed by Wellington Water. Their contact person is Chandra Koswatta (ph. 04 912 4534).
Advice note: *The consent holder must submit a copy of the approved water connection application form (signed by Wellington Water Ltd) when applying for the section 224(c) certificate.*
14. The consent holder constructs a soakpit within each lot in accordance with the document titled Soakage Test Report by Soakage Test Services Ltd, dated 13 October 2022 and provides as built plans at the time of 224(c) certification.
15. The consent holder shall prepare a maintenance schedule for the private stormwater soakage system. The maintenance schedule shall all maintenance requirements.
16. That the consent holder installs marker posts at the termination point of all sewer and stormwater laterals. The marker posts shall be a minimum of 50mm by 50mm treated timber posts no less than 1m high and painted red for sewer and green for stormwater. That the consent holder shall also paint the terminal of each pipe red for sewer and green for stormwater.
17. That the consent holder constructs a new concrete vehicle crossing to serve the lots in accordance with Council's standards, drawing CM1005-25R and approved plans.
18. That proposed right of way area shall be constructed and sealed in accordance with NZS4404:2010 and approved plans.
19. That the consent holder provides underground telecommunications and electrical services to each lot in accordance with the requirements of the relevant utility authority.
Please note: *Evidence of compliance with this condition must be in the form of completion letters issued by Wellington Electricity and Chorus when applying for the section 224(c) certificate, unless otherwise authorised by Council.*
20. That the consent holder provides Council the as-built plan, certified by a surveyor or engineer, showing the location of all service connections (and, if applicable, new work within private property) relative to the lot boundaries.
21. That the consent holder paves, metals, re-grasses, hydro-seeds or plants all areas exposed by earthworks, trenching or building work as soon as possible after excavation or, at the latest, within a month of completing earthworks to the satisfaction of Council's Development Engineer.
22. That the consent holder remedy at their cost any damage to existing Council infrastructure resulting from work carried out directly or indirectly under this consent. Any remediation

work required under this condition must occur prior to certification pursuant to section 224c.

23. That the consent holder pays any outstanding fees, and a contribution to Council's Reserves Purchases and Development Account at Council's standard rate of 7.5% of the value of the additional residential allotment or capped at \$10,000 per allotment whichever is the lesser. The amounts required will be determined on the basis of a market value assessment from a registered valuer. It is the consent holder's responsibility to instruct the valuer and supply Council with this assessment. The amount to be paid will be determined when the consent holder submits the qualified valuer's assessment.

Consent notices

With respect to Lots 1 to 3 on the Plan:

24. That, in accordance with section 221 of the Resource Management Act 1991, Council registers a consent notice on the record of title of Lot 1, Lot 2 and Lot 3 to state that the dwellings thereon must be built in accordance with the approved plans.

Please note: *This consent notice will not be registered on the new titles if all the dwellings are substantially constructed prior to section 224c certificate being issued.*

25. That, in accordance with section 221 of the Resource Management Act 1991, Council registers a consent notice on the record of title of Lot 3 to ensure any dwelling built on this lot have foundations designed by a chartered professional structural engineer to comply with the requirements of the 'Regional Standard for Water Services 2021' Clause 4.4.14 - 'Pipes near Buildings'. The design and details of these foundations shall be submitted as part of any building consent applied for on this lot.

26. That, in accordance with section 221 of the Resource Management Act 1991, Council registers a consent notice on the record of title of Lot 1, Lot 2 and Lot 3 to notify the owners that the properties utilise stormwater soakage system. The property owners are responsible for the maintenance and upkeep requirements of the soakage system at all times in accordance with the maintenance schedule for all stormwater devices which details the maintenance required.

Processing Planner:



Nancy Gomez

Senior Resource Consents Planner

Peer reviewer:



Peter McDonald

Senior Resource Consents Planner

Application lodged: 22 November 2022

Application approved: 6 January 2023

No of working days taken to process the application: 18

8. NOTES:

- The subdivision resource consent is subject to payment of a development contribution fee. Payment of this fee is required before receiving section 224(c) certification.

Dev. Con. Calc.		Current Price Index: 1483		GST rate: 15.00%		RESET	
		Residential		Catchment			
		Fee per lot	Total fee				
Number of additional lots	2			<input type="radio"/> Western Hills <input checked="" type="radio"/> Valley Floor <input type="radio"/> Stokes Valley <input type="radio"/> Wainuiomata <input type="radio"/> Eastbourne <input type="radio"/> Rural			
Transport	<input checked="" type="checkbox"/>	2,355.23	4,710.45				
Water	<input checked="" type="checkbox"/>	7,567.96	15,135.93				
Wastewater	<input checked="" type="checkbox"/>	3,636.44	7,272.88				
Stormwater	<input checked="" type="checkbox"/>	380.78	761.57				
Total		13,940.42	27,880.83				
Total fee			\$27,880.83				
GST			\$4,182.13				
Total contribution payable			\$32,062.96				

- In accordance with section 357 of the Resource Management Act 1991, the consent holder is able to object to the conditions of the consent. The consent holder must submit reasons in writing to Council within 15 working days of the date of this decision.
- The consent lapses, in accordance with section 125 of the Resource Management Act 1991, if the proposal is not given effect to within five years.
- The consent applies to the application as approved by Council. The consent holder should notify Council if there are changes to any part of the plans. Council may require that the consent holder submits a new resource consent application.
- The proposal has been assessed against the requirements of the city's District Plan. Bylaws may apply to the proposal that may require separate approval from Council before starting any site works. See huttcity.govt.nz for a full list of bylaws.
- The proposal has not been checked for compliance with the Building Act 2004. No associated building work should start without first getting a building consent.
- The consent is not a licence to create adverse effects such as unwarranted dust, noise or disruption. It does not change the legal duty to avoid, remedy or minimise such effects. Council may enforce the provisions of the Resource Management Act 1991 if the consent holder fails to meet this obligation.
- Failure to comply with an abatement notice may result in Council imposing an infringement fine or initiating prosecution.
- Before commencement of any work within the legal road corridor, including the laying of services, application is to be made for a Corridor Access Request (CAR). A CAR request

can be made through contacting BeforeUdig either on their website: beforeudig.co.nz or 0800 248 344. Work must not proceed within the road reserve until the CAR has been approved, including the approved traffic management plan if required.

- Constructing, modifying or repairing a vehicle crossing requires separate Council approval, in addition to the approved resource consent. The vehicle crossing is to be constructed in accordance with Council's standards and codes. For more information contact the Transport Division via (04) 570 6881 or click the following link: huttcity.govt.nz/Services/Roads-and-parking/Vehicle-crossings/

GRANTED
6/01/2023

HUTT CITY COUNCIL



MOORE DESIGN

12 FORD ROAD, MANOR PARK
LOWER HUTT

DRAWING REGISTER

DWG NO	DWG TITLE	REVISION	DWG USE
S10001	TOPOGRAPHIC SURVEY PLAN SH 1	-	CONSENT
S10002	TOPOGRAPHIC SURVEY PLAN SH 2	-	CONSENT
S10003	SCHEME PLAN SH 1	-	CONSENT
S10004	SCHEME PLAN SH 2	-	CONSENT
S10005	SERVICES PLAN	A	CONSENT



LEGEND

TYPE	STYLE / SYMBOL	TYPE	STYLE / SYMBOL
<u>SURVEY FEATURES</u>		STORMWATER DOWNPIPE	
SURVEY MARK		STORMWATER SUMP	
SURVEY PEG/DISK		STORMWATER SOAKPIT	
POST		STORMWATER HEADWALL	
<u>BOUNDARY FEATURES</u>		STORMWATER PUMPSTATION	
BOUNDARY LINE		SEWER PIPE	
ABUTMENT		SEWER RISING MAIN	
EASEMENT		SEWER MANHOLE/INSPECTION	
<u>GROUND FEATURES</u>		SEWER GULLYTRAP	
FENCE		SEWER JOINT	
GATE		SEWER SADDLE	
SOLID FENCE E.X. BRICK		SEWER PUMPSTATION	
WALL BOTTOM		WATER PIPE	
WALL TOP		WATER MANHOLE	
STREET SIGN		WATER TOBY	
SPOT HEIGHT		WATER THRUST BLOCKS	
TOP OF BANK		WATER VALVE AIR	
BOTTOM OF BANK		WATER VALVE SLUICE	
CHANGE OF GRADE		WATER VALVE SCOUR	
OPEN DRAIN INVERT		POWER UNDERGROUND (U/G)	
TEST LOCATION		POWER UNDERGROUND (O/H)	
EDGE OF SEAL		POWER POLE	
EDGE OF METAL/TRACK		POWER STREET LIGHT	
KERB & CHANNEL		POWER SERVICE PIT	
MOUNTABLE KERB & CHANNEL		POWER CONNECTION BOX	
NIB KERB		TELECOM UNDERGROUND	
DISH DRAIN		TELECOM OVERHEAD (O/H)	
FOOTPATH		TELECOM SERVICE POLE	
STEPS		TELECOM SERVICE PIT	
DRIVEWAY		TELECOM PILLAR	
RAMP		GAS MAIN	
TRENCH		GAS VALVE	
STOCKPILE		GAS METER	
RAIL TRACK		UNKNOWN	
TREE		MANHOLE UNKNOWN	
EDGE OF GARDEN/HEDGE			
STUMP			
<u>STRUCTURE FEATURES</u>			
BUILDING EDGE			
BUILDING EAVE/ROOF LINES			
COLUMN			
NON BUILDING EDGE E.X. DECK			
DOORWAY			
BRIDGE			
WHARF			
<u>EARTHWORKS FEATURES</u>			
CUT INTERFACE			
FILL INTERFACE			
<u>SERVICES</u>			
STORMWATER PIPE			
STORMWATER MANHOLE			

CONSENT

COVER SHEET

CHETWIN
LAND SURVEYING
027 650 1115
info@chetwinsurveying.co.nz
chetwinsurveying.co.nz

Client:

Prepared for MOORE DESIGN

Project:

LOTS 1 - 3 BEING SUBDIVISION PF
LOT 3 DP 20455
12 FORD ROAD, MANOR PARK

Job No: J22042

Surveyed by:	GFC	14/07/2022	Revision
Designed by:			
Drawn by:	GFC	15/07/2022	
Approved by:	GFC	15/07/2022	
Drawing Number	S10001		
			Scale

WARNING: Before commencing works the contractor must ensure that this plan is the latest revision

Date issued: Tue Dec 6 09:38:11 2022

A3



CONSENT

 506m²
WN526/299

RESOURCE CONSENT

GRANTED 6/01/2023

HUTT CITY COUNCIL



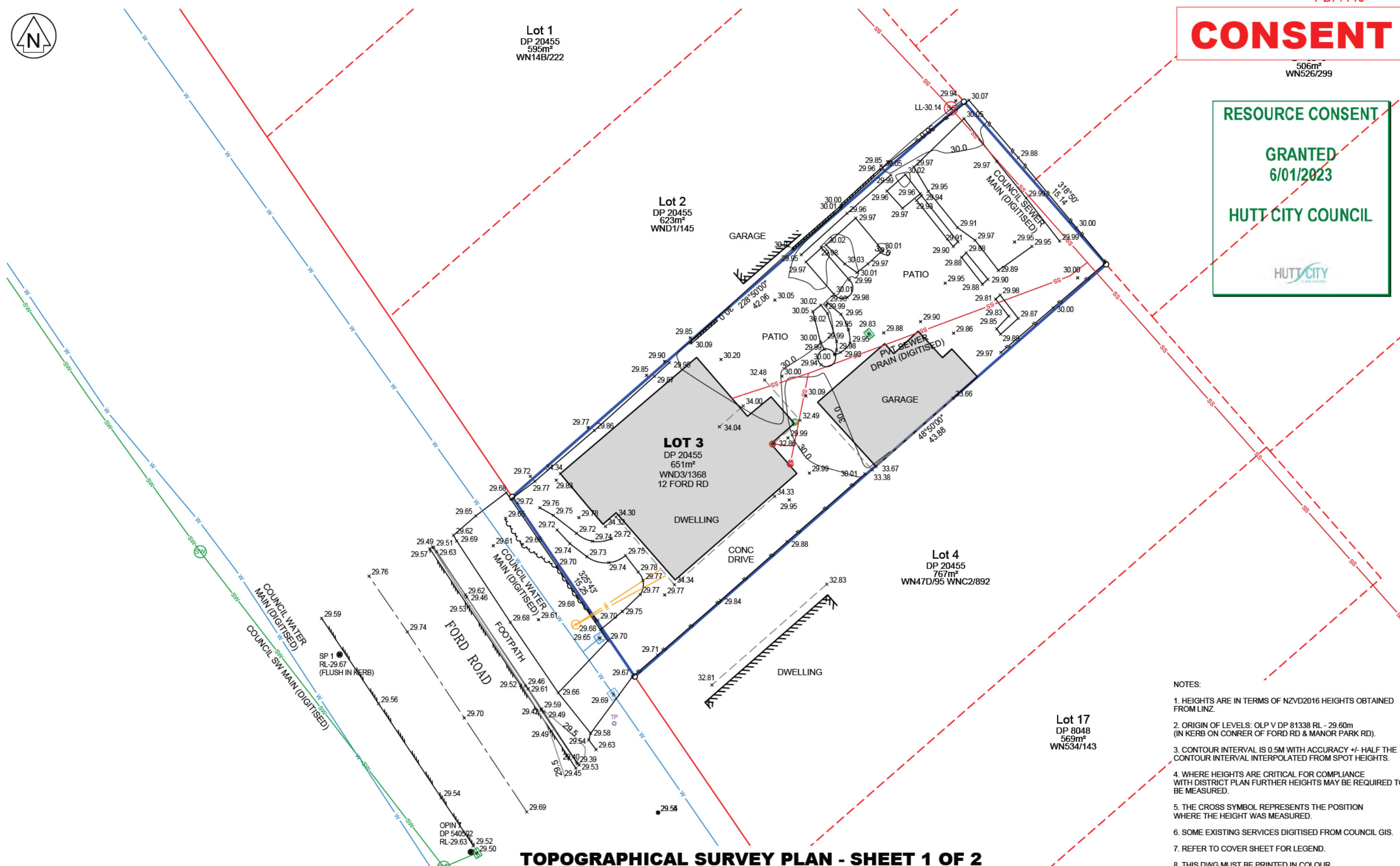
Lot 1
DP 20455
595m²
WN14B/222

Lot 2
DP 20455
623m²
WND1/145

LOT 3
DP 20455
651m²
WND3/1368
12 FORD RD

Lot 4
DP 20455
767m²
WN47D/95 WNC2/892

Lot 17
DP 8048
569m²
WN534/143



TOPOGRAPHICAL SURVEY PLAN - SHEET 1 OF 2

NOTES:

1. HEIGHTS ARE IN TERMS OF NZVD2016 HEIGHTS OBTAINED FROM LINZ.
2. ORIGIN OF LEVELS: OLP V DP 81338 RL - 29.60m (IN KERB ON CONRER OF FORD RD & MANOR PARK RD).
3. CONTOUR INTERVAL IS 0.5M WITH ACCURACY +/- HALF THE CONTOUR INTERVAL INTERPOLATED FROM SPOT HEIGHTS.
4. WHERE HEIGHTS ARE CRITICAL FOR COMPLIANCE WITH DISTRICT PLAN FURTHER HEIGHTS MAY BE REQUIRED TO BE MEASURED.
5. THE CROSS SYMBOL REPRESENTS THE POSITION WHERE THE HEIGHT WAS MEASURED.
6. SOME EXISTING SERVICES DIGITISED FROM COUNCIL GIS.
7. REFER TO COVER SHEET FOR LEGEND.
8. THIS DWG MUST BE PRINTED IN COLOUR.

Client:

Prepared for MOORE DESIGN

Project:

LOTS 1 - 3 BEING SUBDIVISION PF
LOT 3 DP 20455
12 FORD ROAD, MANOR PARK

Job No: J22042

Surveyed by:	GFC	14/07/2022	Revision
Designed by:			
Drawn by:	GFC	15/07/2022	
Approved by:	GFC	15/07/2022	
Drawing Number	S10001		
	Scale 1:250		

CONSENT

RESOURCE CONSENT

GRANTED
6/01/2023

HUTT CITY COUNCIL

HUTT CITY
COUNCILLot 1
DP 20455
595m²
WN14B/222Lot 2
DP 20455
623m²
WND1/145LOT 3
DP 20455
651m²
WND3/1368
12 FORD RDLot 4
DP 20455
767m²
WN47D/95 WNC2/892Lot 17
DP 8048
569m²
WN534/143**TOPOGRAPHICAL SURVEY PLAN - SHEET 2 OF 2**

NOTES:

1. HEIGHTS ARE IN TERMS OF NZVD2016 HEIGHTS OBTAINED FROM LINZ.
2. ORIGIN OF LEVELS: OLP V DP 81338 RL - 29.60m (IN KERB ON CONRER OF FORD RD & MANOR PARK RD).
3. CONTOUR INTERVAL IS 0.5M WITH ACCURACY +/- HALF THE CONTOUR INTERVAL INTERPOLATED FROM SPOT HEIGHTS.
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6. SOME EXISTING SERVICES DIGITISED FROM COUNCIL GIS.
7. REFER TO COVER SHEET FOR LEGEND.
8. THIS DWG MUST BE PRINTED IN COLOUR.

Client:

Prepared for MOORE DESIGN

Project:

LOTS 1 - 3 BEING SUBDIVISION PF
LOT 3 DP 20455
12 FORD ROAD, MANOR PARK

Job No: J22042

Surveyed by:	GFC	14/07/2022	Revision
Designed by:			
Drawn by:	GFC	15/07/2022	
Approved by:	GFC	15/07/2022	
Drawing Number	S10002		
	Scale 1:250		



MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT (BURDENED LAND)	DOMINANT TENEMENT (BENEFITED LAND)
Right of way	A	Lot 1	Lots 2 - 3
Right to convey electricity	B & E	Lot 2	Lot 3
Right to convey water			
Right to convey telecommunications			
Right to convey gas			
Right of way	E	Lot 2	Lot 1
Right to drain sewage	C	Lot 3	Lots 1 & 2
	B & E	Lot 2	Lot 1

MEMORANDUM OF EASEMENTS IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT (BURDENED LAND)	GRANTEE
Right to drain sewage	D	Lot 3	Hutt City Council

Lot 1
DP 20455
595m²
WN14B/222

Lot 2
DP 20455
623m²
WND1/145

Lot 4
DP 20455
767m²
WN47D/95 WNC2/892

Lot 17
DP 8048
569m²
WN534/143

CONSENT

506m²
WN526/299

RESOURCE CONSENT

GRANTED
6/01/2023

HUTT CITY COUNCIL



SCHEME PLAN - SHEET 1 OF 2

NOTES:

- HEIGHTS ARE IN TERMS OF NZVD2016 HEIGHTS OBTAINED FROM LINZ.
- ORIGIN OF LEVELS: OLP V DP 81338 RL - 29.60m (IN KERB ON CORNER OF FORD RD & MANOR PARK RD).
- CONTOUR INTERVAL IS 0.5M WITH ACCURACY +/- HALF THE CONTOUR INTERVAL INTERPOLATED FROM SPOT HEIGHTS.
- WHERE HEIGHTS ARE CRITICAL FOR COMPLIANCE WITH DISTRICT PLAN FURTHER HEIGHTS MAY BE REQUIRED TO BE MEASURED.
- AREAS AND DIMENSIONS SUBJECT TO FINAL SURVEY.
- SOME EXISTING SERVICES DIGITISED FROM COUNCIL GIS.
- REFER TO COVER SHEET FOR LEGEND.
- THIS DWG MUST BE PRINTED IN COLOUR.

Client:

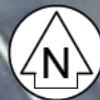
Prepared for MOORE DESIGN

Project:

LOTS 1 - 3 BEING SUBDIVISION PF
LOT 3 DP 20455
12 FORD ROAD, MANOR PARK

Job No: J22042

Surveyed by:	GFC	14/07/2022	Revision
Designed by:	GFC	17/11/2022	A
Drawn by:	GFC	17/11/2022	
Approved by:	GFC	17/11/2022	
Drawing Number	S10003		
			Scale
			1:250



MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT (BURDENED LAND)	DOMINANT TENEMENT (BENEFITED LAND)
Right of way Right to convey electricity Right to convey water Right to convey telecommunications Right to convey gas	A B & E	Lot 1 Lot 2	Lots 2 - 3 Lot 3
Right of way	E	Lot 2	Lot 1
Right to drain sewage	C B & E	Lot 3 Lot 2	Lots 1 & 2 Lot 1

MEMORANDUM OF EASEMENTS IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT (BURDENED LAND)	GRANTEE
Right to drain sewage	D	Lot 3	Hutt City Council

CONSENT

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6/01/2023

HUTT CITY COUNCIL

Lot 1
DP 20455
595m²
WN14B/222

Lot 2
DP 20455
623m²
WND1/145

LOT 3
SITE AREA=225m²
COVERAGE AREA=82.7m²
SITE COVERAGE=36.8%

LOT 2
SITE AREA=194m²
NET SITE AREA=143m²
COVERAGE AREA=82.7m²
SITE COVERAGE=42.6%

LOT 1
SITE AREA=232m²
NET SITE AREA=168m²
COVERAGE AREA=87.0m²
SITE COVERAGE=37.5%

Lot 4
DP 20455
767m²
WN47D/95 WNC2/892

Lot 17
DP 8048
569m²
WN534/143

FORD ROAD

NOTES:

1. HEIGHTS ARE IN TERMS OF NZVD2016 HEIGHTS OBTAINED FROM LINZ.
2. ORIGIN OF LEVELS: OLP V DP 81338 RL - 29.60m (IN KERB ON CONRER OF FORD RD & MANOR PARK RD).
3. CONTOUR INTERVAL IS 0.5M WITH ACCURACY +/- HALF THE CONTOUR INTERVAL INTERPOLATED FROM SPOT HEIGHTS.
4. WHERE HEIGHTS ARE CRITICAL FOR COMPLIANCE WITH DISTRICT PLAN FURTHER HEIGHTS MAY BE REQUIRED TO BE MEASURED.
5. AREAS AND DIMENSIONS SUBJECT TO FINAL SURVEY.
6. SOME EXISTING SERVICES DIGITISED FROM COUNCIL GIS.
7. REFER TO COVER SHEET FOR LEGEND.
8. THIS DWG MUST BE PRINTED IN COLOUR.

SCHEME PLAN - SHEET 2 OF 2

Client:

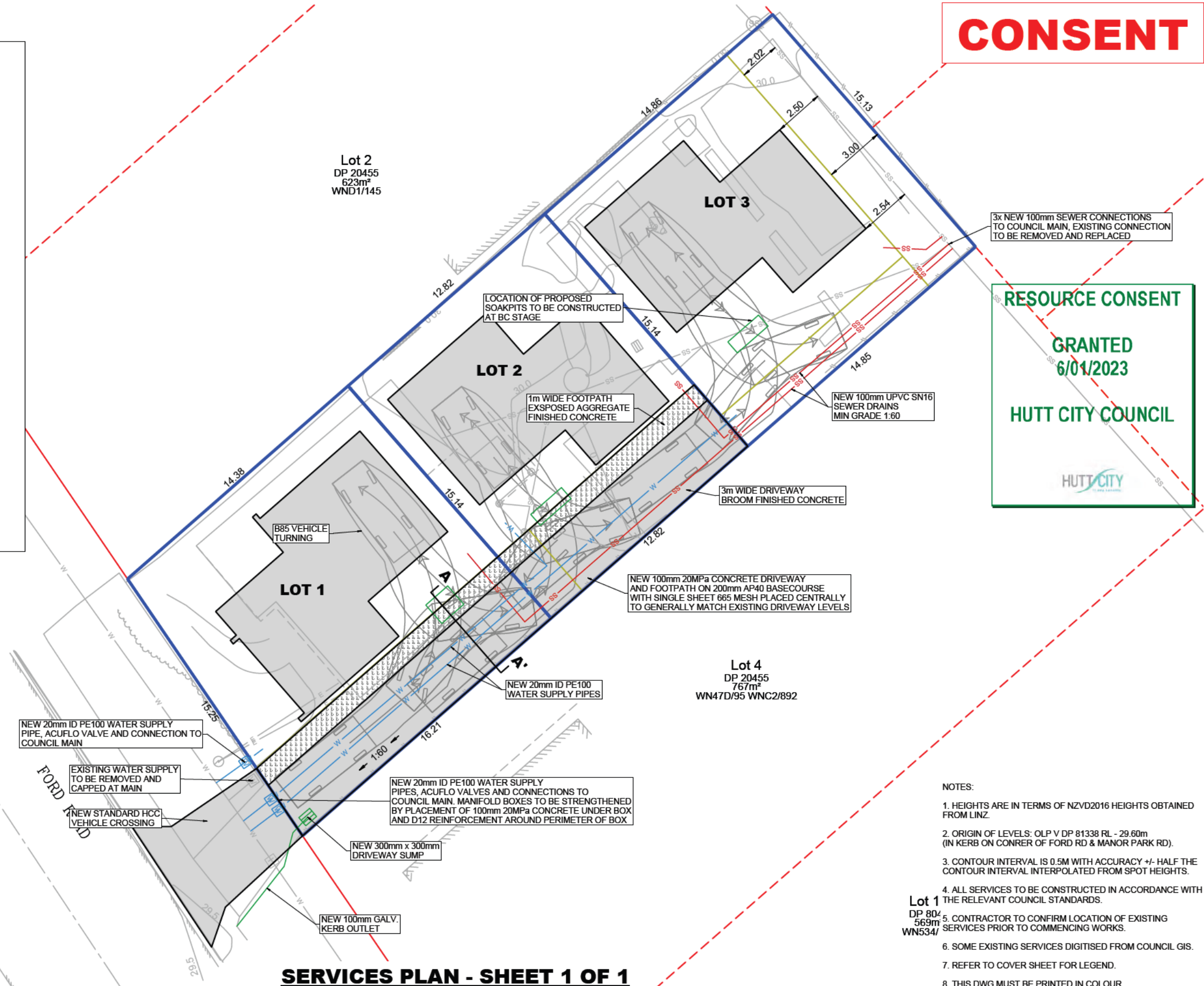
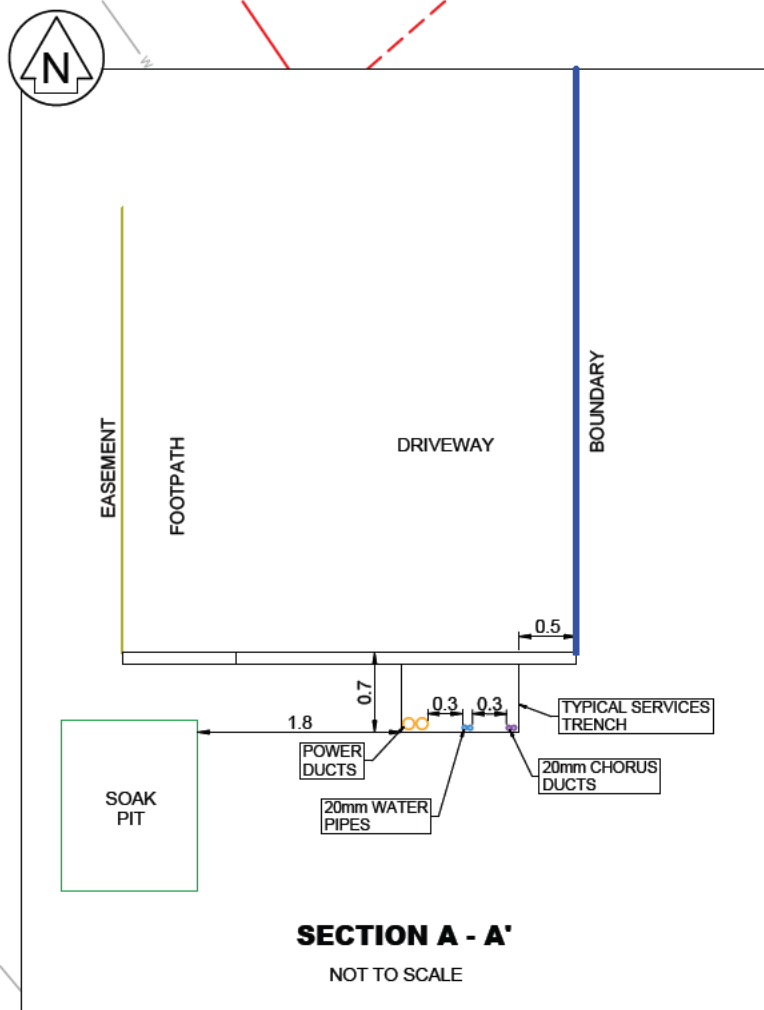
Prepared for MOORE DESIGN

Project:

LOTS 1 - 3 BEING SUBDIVISION PF
LOT 3 DP 20455
12 FORD ROAD, MANOR PARK

Job No: J22042

Surveyed by:	GFC	14/07/2022	Revision
Designed by:	GFC	17/11/2022	A
Drawn by:	GFC	17/11/2022	
Approved by:	GFC	17/11/2022	
Drawing Number	S10004		
			Scale 1:250

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6/01/2023**HUTT CITY COUNCIL****NOTES:**

1. HEIGHTS ARE IN TERMS OF NZVD2016 HEIGHTS OBTAINED FROM LINZ.
2. ORIGIN OF LEVELS: OLP V DP 81338 RL - 29.60m (IN KERB ON CONRER OF FORD RD & MANOR PARK RD).
3. CONTOUR INTERVAL IS 0.5M WITH ACCURACY +/- HALF THE CONTOUR INTERVAL INTERPOLATED FROM SPOT HEIGHTS.
4. ALL SERVICES TO BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT COUNCIL STANDARDS.
5. CONTRACTOR TO CONFIRM LOCATION OF EXISTING SERVICES PRIOR TO COMMENCING WORKS.
6. SOME EXISTING SERVICES DIGITISED FROM COUNCIL GIS.
7. REFER TO COVER SHEET FOR LEGEND.
8. THIS DWG MUST BE PRINTED IN COLOUR.

Lot 1
DP 804
569m²
WN534/

Client:

Prepared for MOORE DESIGN

Project:

LOTS 1 - 3 BEING SUBDIVISION PF
LOT 3 DP 20455
12 FORD ROAD, MANOR PARK

Job No: J22042

Surveyed by:	GFC	14/07/2022
Designed by:	GFC	06/12/2022
Drawn by:	GFC	06/12/2022
Approved by:	GFC	06/12/2022

Drawing Number
S10005

Revision
A
Scale
1:200

12 Ford Road

Jones Homes

Project No:J1128

Resource Consent Drawings

Date issued:
6/12/2022



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6/01/2023
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6/12/2022

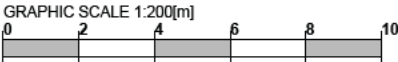
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9/19 AM 6/12/2022 I:\Projects\J1101-J1200\J1128 - 12 Ford Road, Manor Park\Drawing Documents\Concept Design\J1128 - 12 Ford Road Main file.pln

Design Criteria:

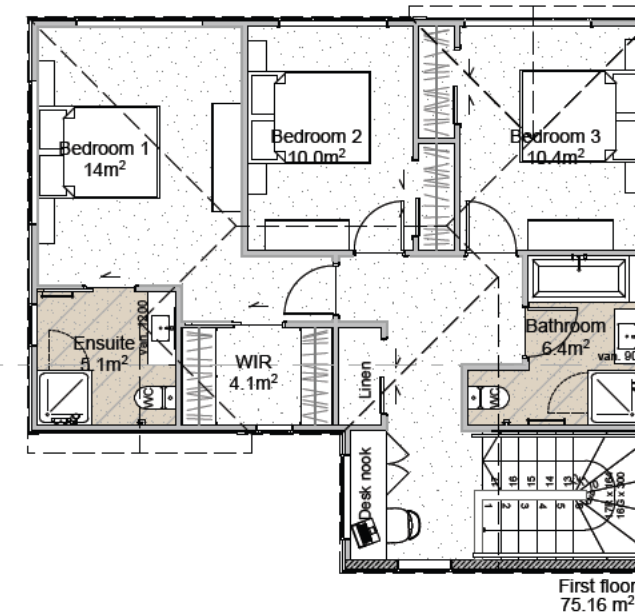
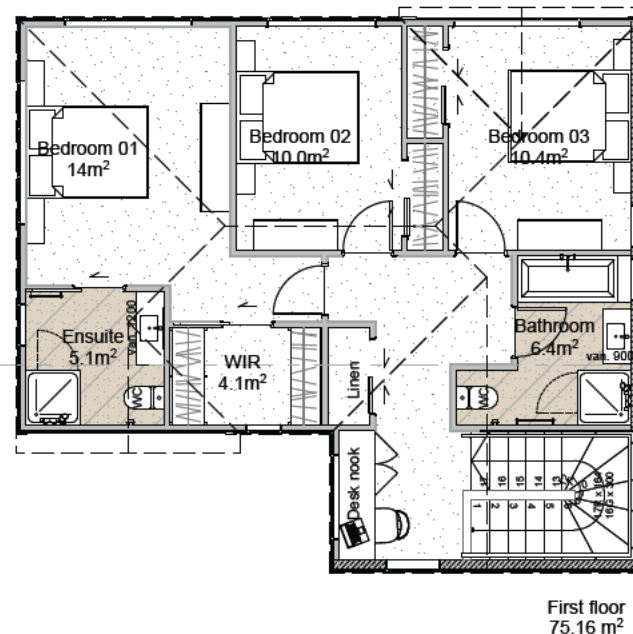
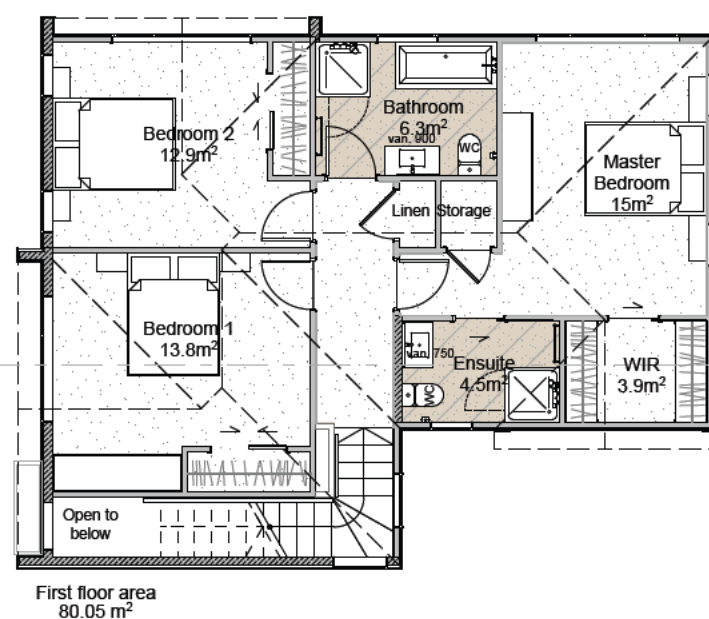
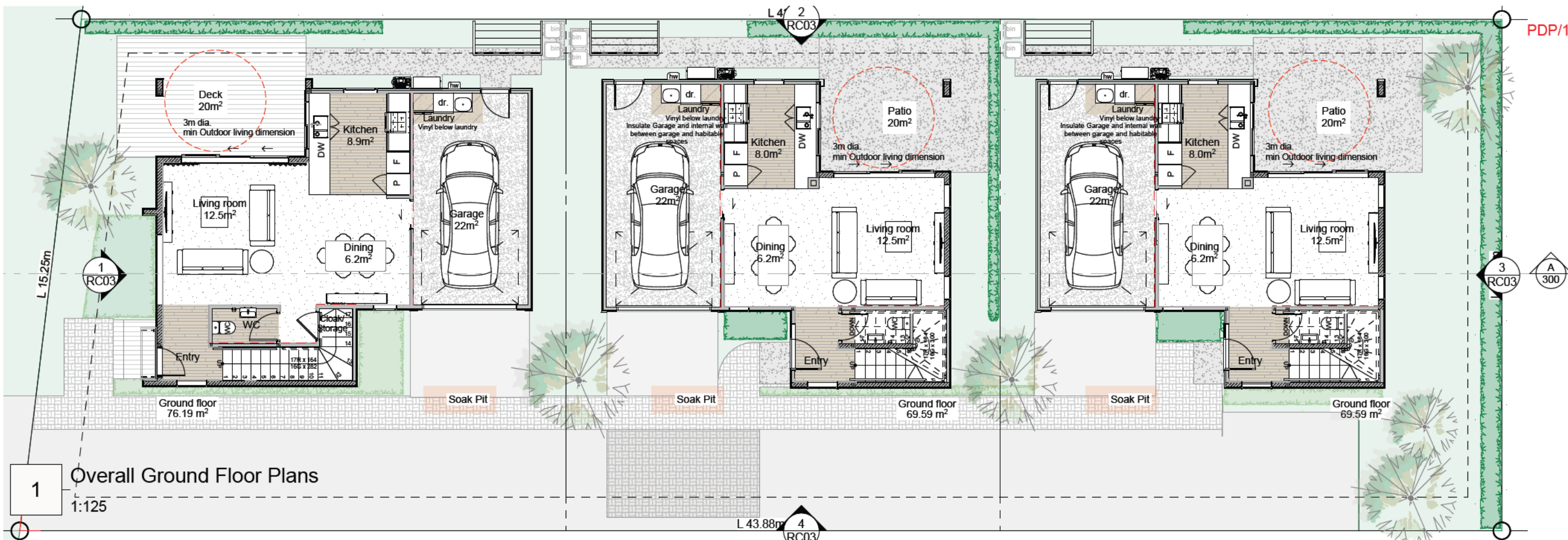
Wind zone:	Medium
Earthquake zone:	3
Exposure zone:	C
Floor load:	1.5 kPa
Deck load:	2 kPa
Climate Zone:	2
Altitude:	29
Soil type:	Moderate Liquefaction
Risk Group:	SH
Flood Zone:	0.23% AEP
Heritage Zone:	n/a



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Floor Areas

Lot 1	
Gmd Dwelling	: 76.19m²
1st Dwelling	: 80.05m²
	: 156.24m²
Lot 2	
Gmd Dwelling	: 69.6m²
1st Dwelling	: 75.16m²
	: 144.76m²
Lot 3	
Gmd Dwelling	: 69.6m²
1st Dwelling	: 75.16m²
	: 144.76m²

Total Building area : 445.76m²

Coverage Area (dwellings) : 252.5m²

Coverage : 39% (not including decks)

Site gross area: 651 m²

Timber Framing:

Wall Framing Legend:

	walls with a dashed line indicate internal Load Bearing Walls. Refer to section
	B3.1 90 x 45 External timber framing
	B3.2 140 x 45 External timber framing

Landscaping Legend:

	Concrete Path / Driveway
	Permeable Paving
	Garden Bed
	Grass / Lawn

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Contractor to check dimensions on site prior to fabrication & construction.

Project: **12 Ford Road**
Manor Park, Lower Hutt

Client:
Jones Homes

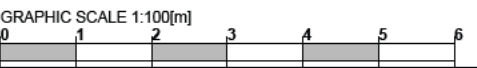
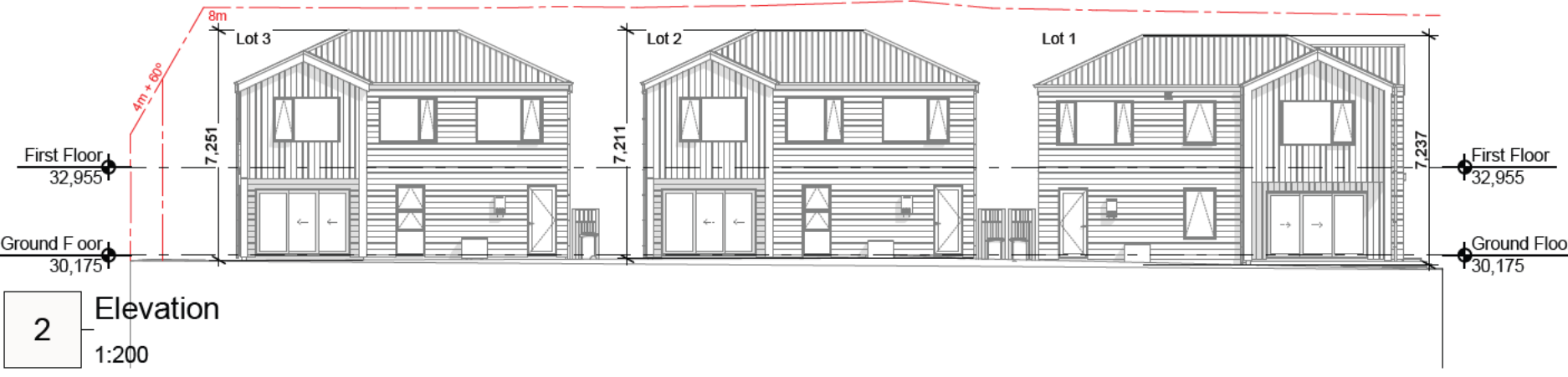
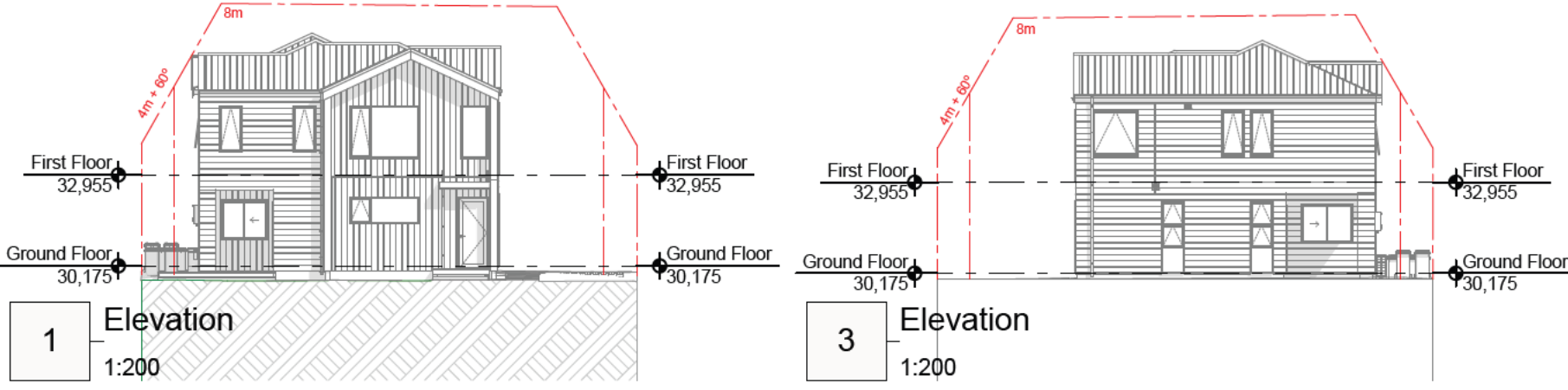
Contents:
New Floor Plans

RevID	Change Name	Date

MOORE DESIGN

Design: CM A3 Scale: 1:125
Drawn: EG Date: 6/12/2022
Checked: SRS Job No: J1128

SHEET
No. **RC02**
REV
No.



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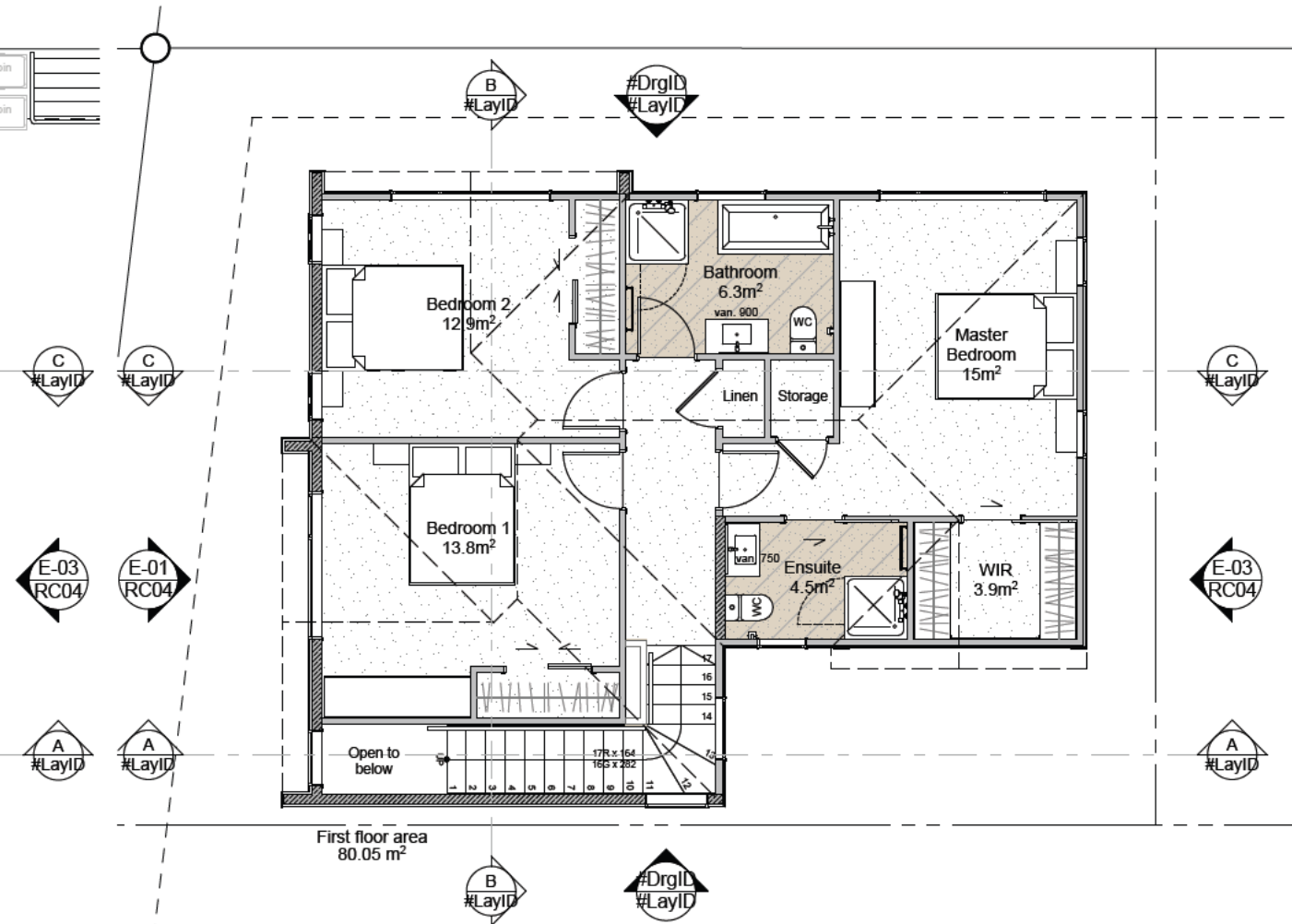
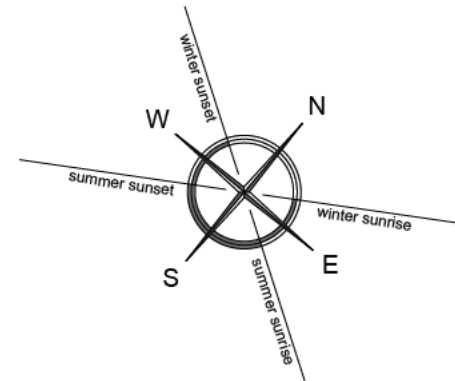
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Floor Finish Legend:

- Carpet
- Timber Decking
- Timber-look Flooring
- Vinyl Flooring
- Exposed Aggregate

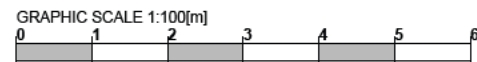


1 Floor Plan - Ground Floor
1:100

2 Floor Plan - First Floor
1:100



E-01 Elevation
1:100




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Project: 12 Ford Road Manor Park, Lower Hutt	Client: Jones Homes	Contents: Lot 1 New Floor Plans and Road Facing Glazing	RevID	Change Name	Date		Contractor to check dimensions on site prior to fabrication & construction.				
							Design: CM	A3 Scale: 1:100, 1:1	SHEET No. RC04	REV No.	
							Drawn: EG	Date: 6/12/2022			
							Checked: SRS	Job No: J1128			
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1

Exterior from Driveway

Material Notes:

Brand & Type to be confirmed.

- A1. Concrete slab
TBC brick perimeter walls as required
- A2. Timber Framed Deck.
- B1. James Hardie Linea Oblique Vertical
- B2. James Hardie Linea Oblique Horizontal
- B3. Timber facing 230mm wide
- C1. Pre finished profiled metal roofing MC760.

as at


6/12/2022

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Project: 12 Ford Road Manor Park, Lower Hutt	Client: Jones Homes	Contents: 3D Views	RevID	Change Name	Date		Design: CM	A3 Scale: N/A	SHEET No. RC05 REV No.
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							Checked: SRS	Job No: J1128	
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1

Lot 1 Exterior from Footpath

Material Notes:

Brand & Type to be confirmed.

- A1. Concrete slab
TBC brick perimeter walls as required
- A2. Timber Framed Deck.
- B1. James Hardie Linea Oblique Vertical
- B2. James Hardie Linea Oblique Horizontal
- B3. Timber facing 230mm wide
- C1. Pre finished profiled metal roofing MC760.

as at

6/12/2022

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Project: **12 Ford Road**
Manor Park, Lower Hutt

Client:
Jones Homes

Contents:
3D Views - Lot 1 Exterior

RevID	Change Name	Date

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Design: CM	A3 Scale: N/A	SHEET No.	REV No.
Drawn: EG	Date: 6/12/2022	RC06	
Checked: SRS	Job No: J1128		

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1 Lot 1 Living room from Entry



1 Lot 1 Living from Dining room

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ARTISTIC IMPRESSION ONLY

Project: 12 Ford Road Manor Park, Lower Hutt	Client: Jones Homes	Contents: 3D Views - Lot 1 Interior	RevID	Change Name	Date		Design: CM	A3 Scale:N/A	SHEET No. RC07	REV No.		
							Drawn: EG	Date: 6/12/2022				
							Checked: SRS	Job No: J1128				
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1 Lot 2 Exterior

- Material Notes:**
Brand & Type to be confirmed.
- A1. Concrete slab
TBC brick perimeter walls as required
 - A2. Timber Framed Deck.
 - B1. James Hardie Linea Oblique Vertical
 - B2. James Hardie Linea Oblique Horizontal
 - B3. Timber facing 230mm wide
 - C1. Pre finished profiled metal roofing MC760.

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Project: 12 Ford Road Manor Park, Lower Hutt	Client: Jones Homes	Contents: 3D Views - Lot 2 Exterior	RevID	Change Name	Date		Design: CM	A3 Scale:N/A	SHEET No. RC08	REV No.
							Drawn: EG	Date: 6/12/2022		
							Checked: SRS	Job No: J1128		
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1 Lot 3 Exterior

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- Material Notes:**
Brand & Type to be confirmed.
- A1. Concrete slab
TBC brick perimeter walls as required
 - A2. Timber Framed Deck.
 - B1. James Hardie Linea Oblique Vertical
 - B2. James Hardie Linea Oblique Horizontal
 - B3. Timber facing 230mm wide
 - C1. Pre finished profiled metal roofing MC760.

as at
6/12/2022
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ARTISTIC IMPRESSION ONLY

Project: 12 Ford Road Manor Park, Lower Hutt	Client: Jones Homes	Contents: 3D Views - Lot 3 Exterior	RevID	Change Name	Date		Design: CM	A3 Scale: N/A	SHEET No. RC09 REV No.
							Drawn: EG	Date: 6/12/2022	
							Checked: SRS	Job No: J1128	
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1 Lot 3 Living towards Outdoor Living



2 Lot 3 Interior

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Project: 12 Ford Road Manor Park, Lower Hutt	Client: Jones Homes	Contents: 3D Views - Lot 3 Interior	RevID	Change Name	Date		Design: CM	A3 Scale:N/A	SHEET No. RC10	REV No.
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Lot 1
DP 20455
595m²
WN14B/222

Lot 26
DP 8048
506m²
WN526/299

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Lot 2
DP 20455
623m²
WND1/145

LOT 3
DP 20455
651m²
WND3/1368
12 FORD RD

Lot 4
DP 20455
767m²
WN47D/95 WNC2/892

Lot 17
DP 8048
569m²
WN534/143

TOPOGRAPHICAL SURVEY PLAN - SHEET 1 OF 2

NOTES:

1. HEIGHTS ARE IN TERMS OF NZVD2016 HEIGHTS OBTAINED FROM LINZ.
2. ORIGIN OF LEVELS: OLP V DP 81338 RL - 29.60m (IN KERB ON CONRER OF FORD RD & MANOR PARK RD).
3. CONTOUR INTERVAL IS 0.5M WITH ACCURACY +/- HALF THE CONTOUR INTERVAL INTERPOLATED FROM SPOT HEIGHTS.
4. WHERE HEIGHTS ARE CRITICAL FOR COMPLIANCE WITH DISTRICT PLAN FURTHER HEIGHTS MAY BE REQUIRED TO BE MEASURED.
5. THE CROSS SYMBOL REPRESENTS THE POSITION WHERE THE HEIGHT WAS MEASURED.
6. SOME EXISTING SERVICES DIGITISED FROM COUNCIL GIS.
7. REFER TO COVER SHEET FOR LEGEND.
8. THIS DWG MUST BE PRINTED IN COLOUR.

CHETWIN
LAND SURVEYING
027 650 1115
info@chetwinsurveying.co.nz
chetwinsurveying.co.nz

Client:

Prepared for MOORE DESIGN

Project:

TOPOGRAPHIC SURVEY OF
LOT 3 DP 20455
12 FORD ROAD, MANOR PARK

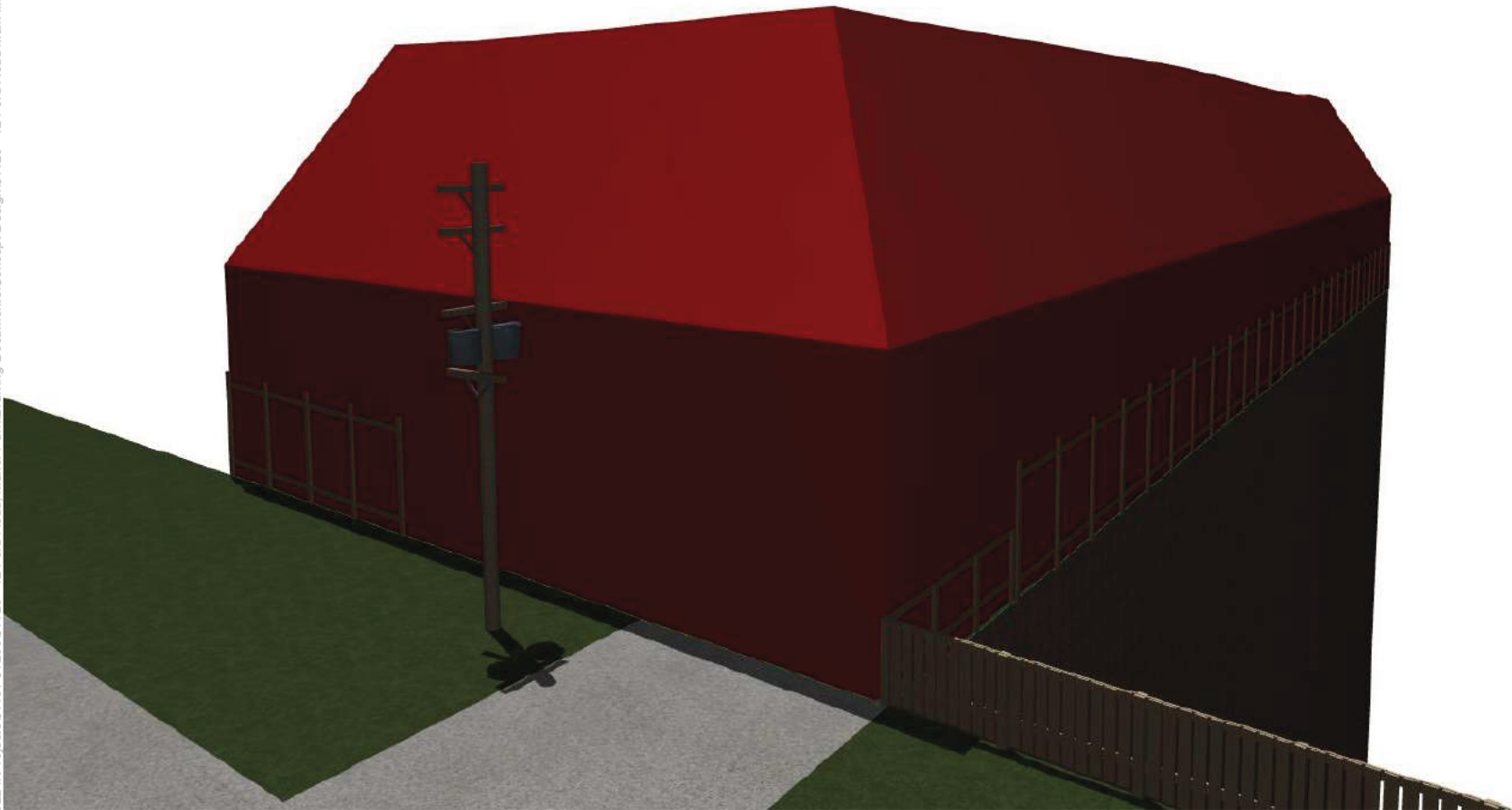
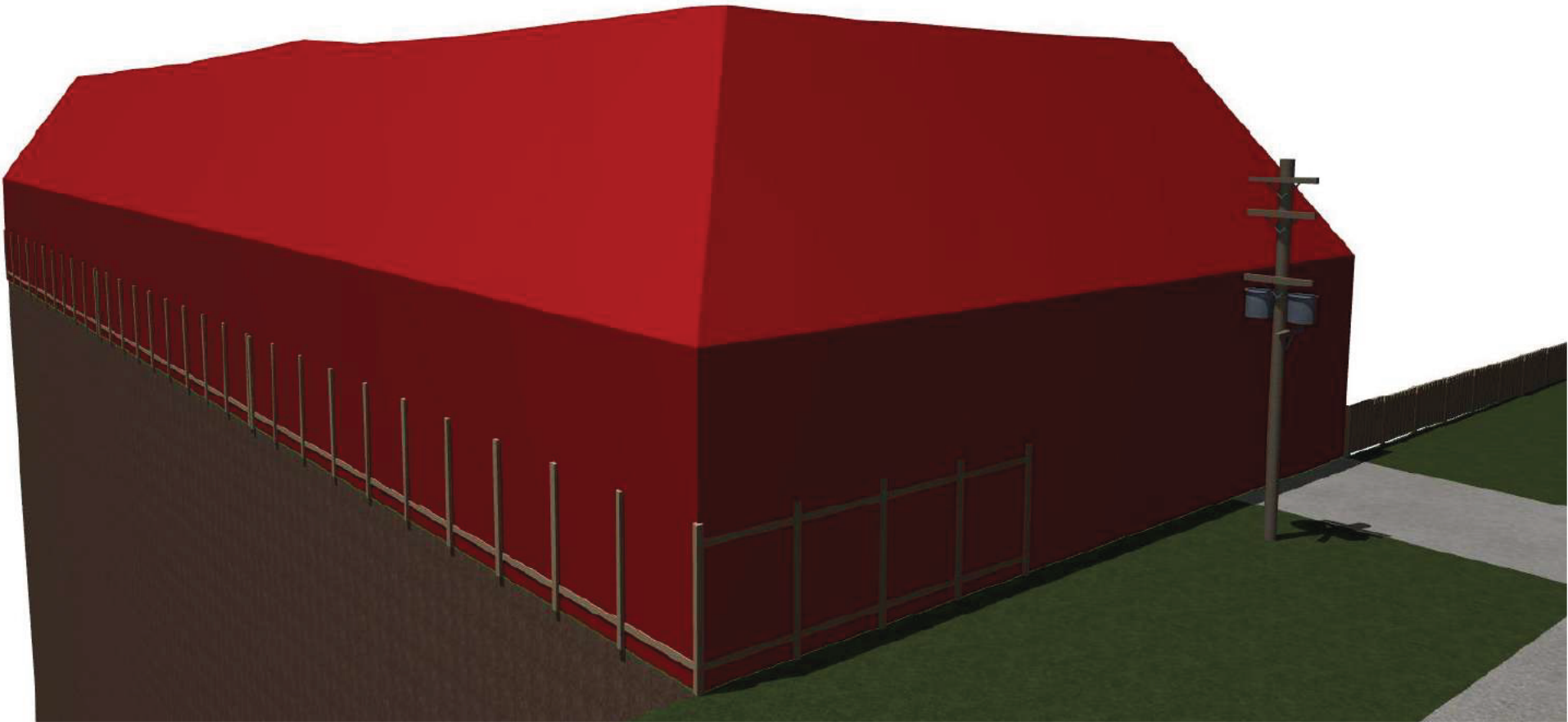
Job No: J22042

Surveyed by:	GFC	14/07/2022	Revision
Designed by:			
Drawn by:	GFC	15/07/2022	
Approved by:	GFC	15/07/2022	
Drawing Number	S10001		
		Scale	1:250

WARNING: Before commencing works the contractor must ensure that this plan is the latest revision


Drawn by: GFC 15/07/2022

A3



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Project: 12 Ford Road Manor Park, Lower Hutt	Client: Jones Homes	Contents: 3D Views - Sunlight Access Planes	RevID	Change Name	Date		Design: CM	A3 Scale:N/A	SHEET No. RC12	REV No.
							Drawn: EG	Date: 6/12/2022		
							Checked: SRS	Job No: J1128		
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Contractor to check dimensions on site prior to fabrication & construction.



Soakage Test Services Ltd

37 Mahia Lane
Waikanae 5036
ph : 027 290 9797
email: soaktest@xtra.co.nz

Soakage Test Report

Date : 13 October 2022

Site : Lot 1
12 Ford Rd
Manor Park
Lower Hutt

Moore Design

Purpose

The project under consideration is the catchment from the proposed new dwelling on Lot 1 of 12 Ford Rd.

With the absence of a Council storm water system in the proximity of the development, the disposal of storm water is proposed to be to a soak pit.

In accordance with compliance Code E1 section 9.0.1 Suitability of the natural ground to receive and dispose of the water without causing damage or nuisance to neighbouring property, is required to be demonstrated.

Siting

Any proposed soak pits should be located 1.5m from any boundary and 2m from any building in accordance with Wellington Water "Regional-Standard-for-Water-Services-May-2019" table 4.5. Refer site plan for specific positioning.

Table 4.5 – Clearance Distances Between Soak Pits and Structures

Proximity to:	Required Clearance
Dwellings	2.0 m
Small outhouses/buildings	1.5 m
Boundaries	1.5 m
Retaining walls	Height of wall + 1.5 m
Sewers	1.0 m

Procedure for test – E1 9.0.2

a) Bore test holes of 100 mm to 150 mm diameter to the depth of the proposed soak pit. If groundwater is encountered in the bore test hole then this depth shall be taken as the depth of the soak pit.

b) Fill the hole with water and maintain full for at least 4 hours, (unless the soakage is so great that the hole completely drains in a short time).

c) Fill the hole with water to within 750 mm of ground level, and record the drop in water level against time, at intervals of no greater than 30 minutes, until the hole is almost empty, or over 4 hours, whichever is the shortest.

d) Plot the drop in water level against time on a graph, and the soakage rate in mm/hr is determined from the minimum slope of the curve. If there is a marked decrease in soakage rate as the hole becomes nearly empty, the lower rates may be discarded and the value closer to the average can be adopted.

The soak pit shall be designed utilising soakage and storage in accordance with the formula in section VM1 9.0.5 of Compliance document E1 1st edition, amendment 9 in effect from 14 Feb 2014. The requirement is to ensure that surface water is discharged without overflowing.

Formula

The volume of storage required in the soak pit, V_{stor} (m^3), shall be calculated by

$$V_{stor} = R_c - V_{soak}$$

Where:

R_c = run-off discharged from the catchment to proposed soak pit in 1 hour (m^3).

V_{soak} = volume disposed of by soakage in 1 hour (m^3).

$$R_c = 10 \times C \times I \times A$$

Where:

C = run-off coefficient – see Run-off coefficient below

I = rainfall intensity (mm/hr) - refer below.

A = area (hectares) of the catchment discharging to the soak pit.

$$V_{soak} = A_{sp} \times S_r \div 1000$$

Where:

A_{sp} = area of the base of the soak pit (m^2).

S_r = soakage rate (mm/hr) determined from test and modified by 50% for margin of safety.

Run-off coefficient = 0.95

Wellington Water "Regional-Standard-for-Water-Services-May-2019" Table 7.1, the catchment area under consideration is the roof of the proposed dwellings with Steel and non-absorbent roof surfaces and the paved surface areas both having a coefficient of 0.95.

Table 7.1 – Runoff Coefficients to be used with Hydrological Design

Area Type	Coefficient C
Fully paved or roofed areas, CBD areas or urban, industrial or commercial areas with greater than 65% coverage permitted by the district plan.	0.95
Industrial/commercial areas with paved plus roof area up to 65% coverage permitted by the district plan.	0.70
Urban areas allowing between 36% and 65% impervious site coverage (inner residential, infill housing, intensive residential development).	0.65
Urban areas allowing coverage up to 35% (residential or outer areas).	0.50
Parks, reserves, green spaces, rural areas.	0.35

Rainfall intensity = 50.64

NIWA data has been used for a 1% AEP 1:100 event with a value of 42.2 which is adjusted 20% for climate change in accordance with Wellington Water recommendations.

Generated from <http://hirds.niwa.co.nz/> for the site

Select Intensity-Duration-Frequency Output table format and add 20% climate change.

Rainfall intensities (mm/hr) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h
1.58	0.633	42.8	29.3	23.6	16.4	11.4
2	0.500	47.0	32.1	25.9	18.0	12.5
5	0.200	61.6	42.0	33.8	23.3	16.1
10	0.100	72.8	49.5	39.7	27.4	18.9
20	0.050	84.5	57.3	45.9	31.6	21.8
30	0.033	91.6	62.1	49.7	34.2	23.5
40	0.025	96.8	65.5	52.4	36.0	24.8
50	0.020	101	68.3	54.6	37.5	25.7
60	0.017	104	70.5	56.4	38.7	26.6
80	0.013	110	74.2	59.3	40.6	27.9
100	0.010	114	77.0	61.5	42.2	28.9

Area of catchment = .0089

Catchment is the proposed 89m² dwelling on Lot 1.

Test conditions

Two tests were conducted on the site. The first towards the rear encountered damp silty sand and gravels at approximately 1.7m. The front test conducted in front of the existing house was augured through softer silty sand encountering gravels at around 2.0m. This report is based on the latter test being the closest proximity to the proposed soak pit.

Date of test:	12 October 2022
Ground water table:	Not encountered
Pre-soak commenced:	09:42 AM
Pre-soak completed:	10:41 using 1246.9 litres

The material removed was quite wet all the way to the bottom and after an hour the water level had risen to 742mm with the delivery of 1246 liters. At this point the rate of soakage was almost matching the delivery rate of the water supply. Continuation of the pre-soak for another 3 hours was considered superfluous.

The system recorded a soakage rate of 27.3mm per hour at the 600mm depth reducing to 4.9mm at the 400mm depth and slowing to 1.0mm per hour at the last 100mm.

The resulting average taken from the lower readings was 3.409mm per hour which is adjusted by 50% margin for safety resulting in an applied rate of 1.705mm per hour.

It is worthy of mention that this rate is highly conservative since it is measured off the very bottom of soakage range of the proposed soak pit and does not take into account the higher rates that would result from hydraulic pressure as the depth increases.

Test methodology

Soakage Test services testing is conducted via an automated system which controls the pre-soak then switching to timer mode which registers the drop in water level in 50mm increments capturing accurate results in accordance with the requirements of VM1.

Conclusion of test results

The soakage system recommended by Soakage Test Services in this report is the result of calculations in accordance with VM1 only. We recommend this be treated as a minimum with on site assessment at construction taking preference if a larger system is considered desirable.

Soakage Test Services accept no liability for failure of the recommended system under events or circumstances exceeding the design constraints.

Recommendation:

Construct a soak pit based on E1 Figure 13 replacing rocks with Cirtex Rainsmart system crates to provide the void space.

Number of units at the base	: 6 (each block 400mm x 715mm)
Total base area	: 1.716m ²
Number of unit high	: 3
Total number of units	: 18
Adjusted storage volume	: 2.15m ³ (95% storage with Rainsmart)

The suggested configuration is 2 crates along (1.43m) by 3 rows wide (1.2m). Because the gravels were encountered at around 2m in this location we recommend 3 units high (1320mm) to reach into the gravels below the silty sand.

Other configurations are acceptable so long as the number of crates used in the base layer are not less than that specified.

Please note the base of the soak pit must be at least 2.0m deep reaching into the free draining gravel material.

Time slice confirmation of design performance:

For the purpose of confirming the performance of the system design, the progression of storage usage has been assessed using the recorded soakage rates at each 50mm depth (adjusted by 50%) and the catchment time sliced into 20 increments using the Hirds_Hyetographs rainfall curve supplied by NIWA.

In the 20 minute event (time sliced in 1 minute increments) the design is expected to reach a maximum depth of 629mm and storage of 1.026m³ which is 48% of the capacity.

In the 60 minute event (time sliced in 3 minute increments) the design is expected to reach a maximum depth of 583mm and storage of 0.95m³ which is 44% of the capacity.

The design is therefore expected to exceed the requirements of E1.

Best Practice recommendation:

To provide the longest service life of the system it is recommended that leaf guards be installed to the downpipes and a first flush system installed.

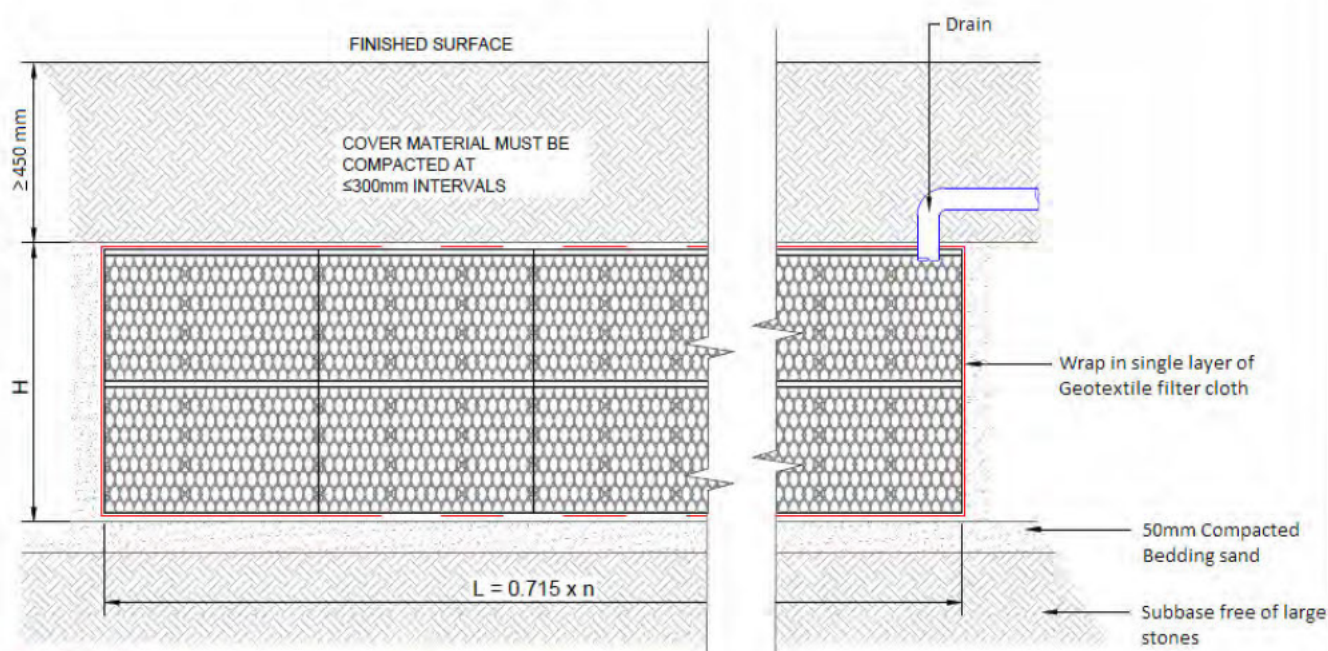
Maintenance:

To provide the longest service life of the system it is recommended that leaf guards be cleaned 6 monthly and the first flush, and any sump(s) be cleaned annually.

PLEASE NOTE:

This configuration is designed for foot traffic loads only. It must not be located under areas of vehicle traffic. We suggest where it is close to a driveway that a terminating barrier to the drive be installed to prevent vehicle traffic over the soak pit.

Soak Pit using Cirtex Rainsmart Stormwater components



Soakage Test Services Ltd

37 Mahia Lane
Waikanae 5036
ph : 027 290 9797
email: soaktest@xtra.co.nz

Soqkaae Test Services Ltd hold Public Liability insurance \$2,000,000 and Professional Indemnity insurance \$250,000

Area of catchment "A"	0.0089	Rainfall Intensity			Smartsoak		Maximum stored in 20 minute event		1.026	48%	Maximum depth in 20 minute event		0.629	48%								
Run off coefficient "C"	0.95		20 minute	60 minute	Soak pit Base area		1.72	Maximum stored in 60 minute event		0.950	44%	Maximum depth in 60 minute event		0.583	44%							
		1%AEP	77	42.2	Soak pit volume		2.15															
					Soakpit depth		1.32															
					Adjustment		0.95															
birds_hyetographs rainfall curve		0.01332	0.01701	0.02184	0.02804	0.03578	0.04509	0.05575	0.06713	0.07816	0.08740	0.09336	0.08923	0.08233	0.07320	0.06126	0.04883	0.03755	0.02821	0.02095	0.01555	1.00000
Rainfall Intensity "I"	30.8	20 Minute Event catchment over time in minutes (mm)																				
Time		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Total M ³ to soakaway system		0.035	0.044	0.057	0.073	0.093	0.117	0.145	0.175	0.204	0.228	0.243	0.232	0.214	0.191	0.160	0.127	0.098	0.073	0.055	0.040	2.604
Depth in soakaway - mm		0.020	0.045	0.078	0.120	0.173	0.236	0.303	0.383	0.467	0.563	0.629	0.533	0.581	0.546	0.561	0.556	0.533	0.495	0.479	0.454	
Net change		0.032	0.042	0.054	0.067	0.088	0.103	0.110	0.129	0.137	0.157	0.108	-0.158	0.079	-0.057	0.024	-0.008	-0.038	-0.062	-0.026	-0.040	
Net volume		0.032	0.073	0.128	0.195	0.283	0.385	0.495	0.624	0.761	0.918	1.026	0.868	0.947	0.890	0.914	0.906	0.868	0.806	0.780	0.740	
Soakage rate mm per hour		96	96	96	195	195	521	1247	1599	2326	2460	4737	13637	4737	8654	4737	4737	4737	4737	2822	2822	
Soakage		0.003	0.003	0.003	0.006	0.006	0.015	0.036	0.046	0.067	0.070	0.135	0.390	0.135	0.248	0.135	0.135	0.135	0.135	0.081	0.081	1.784
Rainfall Intensity "I"	50.64	60 Minute Event catchment over time in minutes (mm)																				
Time		3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	
Total M ³ to soakaway system		0.057	0.073	0.094	0.120	0.153	0.193	0.239	0.287	0.335	0.374	0.400	0.382	0.353	0.313	0.262	0.209	0.161	0.121	0.090	0.067	4.282
Depth in soakaway - m		0.030	0.070	0.122	0.185	0.235	0.288	0.350	0.426	0.502	0.583	0.372	0.506	0.574	0.517	0.529	0.408	0.384	0.336	0.290	0.247	
Net change		0.049	0.065	0.085	0.103	0.082	0.086	0.102	0.123	0.124	0.132	-0.343	0.218	0.110	-0.093	0.020	-0.197	-0.039	-0.079	-0.075	-0.071	
Net volume		0.049	0.113	0.199	0.302	0.384	0.470	0.571	0.694	0.818	0.950	0.607	0.825	0.935	0.842	0.863	0.665	0.626	0.548	0.473	0.402	
Soakage rate mm per hour		96	96	96	195	835	1247	1599	1915	2460												



Soakage Test Services Ltd

37 Mahia Lane
Waikanae 5036
ph : 027 290 9797
email: soaktest@xtra.co.nz

Soakage Test Report

Date : 13 October 2022

Site : Lot 2 & 3
12 Ford Rd
Manor Park
Lower Hutt

Moore Design

Purpose

The project under consideration is the catchment from the proposed new dwelling on Lot 2 & 3 of 12 Ford Rd.

With the absence of a Council storm water system in the proximity of the development, the disposal of storm water is proposed to be to a soak pit.

In accordance with compliance Code E1 section 9.0.1 Suitability of the natural ground to receive and dispose of the water without causing damage or nuisance to neighbouring property, is required to be demonstrated.

Siting

Any proposed soak pits should be located 1.5m from any boundary and 2m from any building in accordance with Wellington Water "Regional-Standard-for-Water-Services-May-2019" table 4.5. Refer site plan for specific positioning.

Table 4.5 – Clearance Distances Between Soak Pits and Structures

Proximity to:	Required Clearance
Dwellings	2.0 m
Small outhouses/buildings	1.5 m
Boundaries	1.5 m
Retaining walls	Height of wall + 1.5 m
Sewers	1.0 m

Procedure for test – E1 9.0.2

a) Bore test holes of 100 mm to 150 mm diameter to the depth of the proposed soak pit. If groundwater is encountered in the bore test hole then this depth shall be taken as the depth of the soak pit.

b) Fill the hole with water and maintain full for at least 4 hours, (unless the soakage is so great that the hole completely drains in a short time).

c) Fill the hole with water to within 750 mm of ground level, and record the drop in water level against time, at intervals of no greater than 30 minutes, until the hole is almost empty, or over 4 hours, whichever is the shortest.

d) Plot the drop in water level against time on a graph, and the soakage rate in mm/hr is determined from the minimum slope of the curve. If there is a marked decrease in soakage rate as the hole becomes nearly empty, the lower rates may be discarded and the value closer to the average can be adopted.

The soak pit shall be designed utilising soakage and storage in accordance with the formula in section VM1 9.0.5 of Compliance document E1 1st edition, amendment 9 in effect from 14 Feb 2014. The requirement is to ensure that surface water is discharged without overflowing.

Formula

The volume of storage required in the soak pit, V_{stor} (m^3), shall be calculated by

$$V_{stor} = R_c - V_{soak}$$

Where:

R_c = run-off discharged from the catchment to proposed soak pit in 1 hour (m^3).

V_{soak} = volume disposed of by soakage in 1 hour (m^3).

$$R_c = 10 \times C \times I \times A$$

Where:

C = run-off coefficient – see Run-off coefficient below

I = rainfall intensity (mm/hr) - refer below.

A = area (hectares) of the catchment discharging to the soak pit.

$$V_{soak} = A_{sp} \times S_r \div 1000$$

Where:

A_{sp} = area of the base of the soak pit (m^2).

S_r = soakage rate (mm/hr) determined from test and modified by 50% for margin of safety.

Run-off coefficient = 0.95

Wellington Water "Regional-Standard-for-Water-Services-May-2019" Table 7.1, the catchment area under consideration is the roof of the proposed dwellings with Steel and non-absorbent roof surfaces and the paved surface areas both having a coefficient of 0.95.

Table 7.1 – Runoff Coefficients to be used with Hydrological Design

Area Type	Coefficient C
Fully paved or roofed areas, CBD areas or urban, industrial or commercial areas with greater than 65% coverage permitted by the district plan.	0.95
Industrial/commercial areas with paved plus roof area up to 65% coverage permitted by the district plan.	0.70
Urban areas allowing between 36% and 65% impervious site coverage (inner residential, infill housing, intensive residential development).	0.65
Urban areas allowing coverage up to 35% (residential or outer areas).	0.50
Parks, reserves, green spaces, rural areas.	0.35

Rainfall intensity = 50.64

NIWA data has been used for a 1% AEP 1:100 event with a value of 42.2 which is adjusted 20% for climate change in accordance with Wellington Water recommendations.

Generated from <http://hirds.niwa.co.nz/> for the site

Select Intensity-Duration-Frequency Output table format and add 20% climate change.

Rainfall intensities (mm/hr) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h
1.58	0.633	42.8	29.3	23.6	16.4	11.4
2	0.500	47.0	32.1	25.9	18.0	12.5
5	0.200	61.6	42.0	33.8	23.3	16.1
10	0.100	72.8	49.5	39.7	27.4	18.9
20	0.050	84.5	57.3	45.9	31.6	21.8
30	0.033	91.6	62.1	49.7	34.2	23.5
40	0.025	96.8	65.5	52.4	36.0	24.8
50	0.020	101	68.3	54.6	37.5	25.7
60	0.017	104	70.5	56.4	38.7	26.6
80	0.013	110	74.2	59.3	40.6	27.9
100	0.010	114	77.0	61.5	42.2	28.9

Area of catchment = .0086

Catchment is the proposed 86m² Dwelling on lot 2 and Lot 3.

Test conditions

Two tests were conducted on the site. The first towards the rear encountered damp silty sand and gravels at approximately 1.7m. The front test conducted in front of the existing house was augured through softer silty sand encountering gravels at around 2.0m. This report is based on the first test being the closest proximity to the proposed soak pit.

Date of test:	12 October 2022
Ground water table:	Not encountered
Pre-soak commenced:	09:10 AM
Pre-soak completed:	10:39 using 1066.9 litres

The material removed was quite damp all the way to the bottom and after an hour the system had delivered 1066 liters. At this point with the rate of soakage, continuation of the pre-soak for another 3 hours was considered superfluous.

The system recorded a soakage rate of 34.6m per hour at the 800mm depth reducing to 17.3m at the 400mm depth and slowing to 6.9m per hour at the last 100mm.

The resulting average taken from the lower readings was 10.465m per hour which is adjusted by 50% margin for safety resulting in an applied rate of 5233mm per hour.

Test methodology

Soakage Test services testing is conducted via an automated system which controls the pre-soak then switching to timer mode which registers the drop in water level in 50mm increments capturing accurate results in accordance with the requirements of VM1.

Conclusion of test results

The soakage system recommended by Soakage Test Services in this report is the result of calculations in accordance with VM1 only. We recommend this be treated as a minimum with on site assessment at construction taking preference if a larger system is considered desirable.

Soakage Test Services accept no liability for failure of the recommended system under events or circumstances exceeding the design constraints.

Recommendation:

Construct a soak pit based on E1 Figure 13 replacing rocks with Cirtex Rainsmart system crates to provide the void space.

Number of units at the base : 5 (each block 400mm x 715mm)

Total base area	: 1.43m ²
Number of unit high	: 2
Total number of units	: 10
Adjusted storage volume	: 1.20m ³ (95% storage with Rainsmart)

The suggested configuration is 1 crates along (0.715m) by 5 rows wide (2.0m). Because the gravels were encountered at around 1.7m in this location we recommend 2 units high (880mm) to reach into the gravels below the silty sand.

Other configurations are acceptable so long as the number of crates used in the base layer are not less than that specified.

Please note the base of the soak pit must be at least 1.7m deep reaching into the free draining gravel material.

Time slice confirmation of design performance:

For the purpose of confirming the performance of the system design, the progression of storage usage has been assessed using the recorded soakage rates at each 50mm depth (adjusted by 50%) and the catchment time sliced into 20 increments using the Hirds_Hyetographs rainfall curve supplied by NIWA.

In the 20 minute event (time sliced in 1 minute increments) the design is expected to reach a maximum depth of 444mm and storage of 0.603m³ which is 50% of the capacity.

In the 60 minute event (time sliced in 3 minute increments) the design is expected to reach a maximum depth of 236mm and storage of 0.321m³ which is 27% of the capacity.

The design is therefore expected to exceed the requirements of E1.

Best Practice recommendation:

To provide the longest service life of the system it is recommended that leaf guards be installed to the downpipes and a first flush system installed.

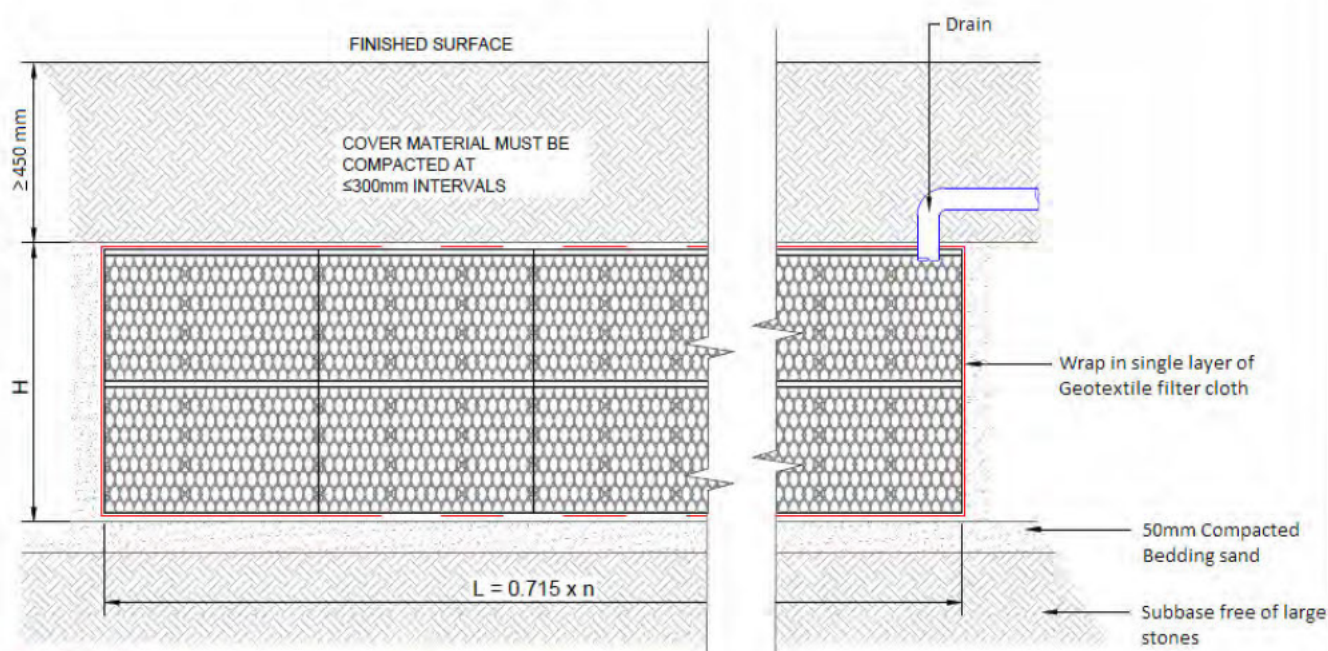
Maintenance:

To provide the longest service life of the system it is recommended that leaf guards be cleaned 6 monthly and the first flush, and any sump(s) be cleaned annually.

PLEASE NOTE:

This configuration is designed for foot traffic loads only. It must not be located under areas of vehicle traffic. We suggest where it is close to a driveway that a terminating barrier to the drive be installed to prevent vehicle traffic over the soak pit.

Soak Pit using Cirtex Rainsmart Stormwater components



Soakage Test Services Ltd

37 Mahia Lane
Waikanae 5036
ph : 027 290 9797
email: soaktest@xtra.co.nz

E1 Methodology:

Moore Design
12 Ford Rd
Manor Park
Lot 2 & Lot 3

"D" = Diameter of bore hole (mm):

"a" = Area of bore hole (m²)

Inputs in yellow cells only
Proposed building
Concrete
Total
150
0.0177

Test conducted by:	
Area M ²	Runoff Coefficient
86	0.95
	0.95
	0.95
86	0.950
Date test conducted :	
Time started :	
Location :	
Presoak:	

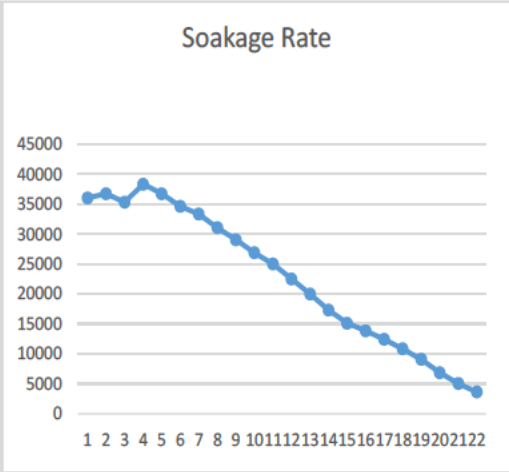
Mixed use coefficient	
12 October 2022	
09:10	
Lat: -41.157608 Lon: 174.97905	
Fill Cycle complete 10:39 Litres: 1066.9*	
Convert to mm per hour	
36000	51 *1000 / dt1 * 60 * 60
36735	(Pin 0 - Pin 1)*1000 / dt2 * 60 * 60
35295	(Pin 1 - Pin 2)*1000 / dt3 * 60 * 60
38298	(Pin 2 - Pin 3)*1000 / dt4 * 60 * 60
36735	(Pin 3 - Pin 4)*1000 / dt5 * 60 * 60
34616	(Pin 4 - Pin 5)*1000 / dt6 * 60 * 60
33334	(Pin 5 - Pin 6)*1000 / dt7 * 60 * 60
31035	(Pin 6 - Pin 7)*1000 / dt8 * 60 * 60
29033	(Pin 7 - Pin 8)*1000 / dt9 * 60 * 60
26866	(Pin 8 - Pin 9)*1000 / dt10 * 60 * 60
25000	(Pin 9 - Pin 10)*1000 / dt11 * 60 * 60
22500	(Pin 10 - Pin 11)*1000 / dt12 * 60 * 60
20000	(Pin 11 - Pin 12)*1000 / dt13 * 60 * 60
17308	(Pin 12 - Pin 13)*1000 / dt14 * 60 * 60
15127	(Pin 13 - Pin 14)*1000 / dt15 * 60 * 60
13847	(Pin 14 - Pin 15)*1000 / dt16 * 60 * 60
12414	(Pin 15 - Pin 16)*1000 / dt17 * 60 * 60
10844	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
9091	(Pin 17 - Pin 18)*1000 / dt19 * 60 * 60
6871	(Pin 18 - Pin 19)*1000 / dt20 * 60 * 60
5043	(Pin 19 - Pin 20)*1000 / dt21 * 60 * 60
3644	(Pin 19 - Pin 20)*1000 / dt21 * 60 * 60
0	(Pin 19 - Pin 20)*1000 / dt21 * 60 * 60
0	(Pin 19 - Pin 20)*1000 / dt21 * 60 * 60
0	(Pin 19 - Pin 20)*1000 / dt21 * 60 * 60
0	(Pin 19 - Pin 20)*1000 / dt21 * 60 * 60

Initial Depth of Water 1.126 (meters)	
Pin 0	1.075
Pin 1	1.025
Pin 2	0.975
Pin 3	0.925
Pin 4	0.875
Pin 5	0.825
Pin 6	0.775
Pin 7	0.725
Pin 8	0.675
Pin 9	0.625
Pin 10	0.575
Pin 11	0.525
Pin 12	0.475
Pin 13	0.425
Pin 14	0.375
Pin 15	0.325
Pin 16	0.275
Pin 17	0.225
Pin 18	0.175
Pin 19	0.125
Pin 20	0.075
Pin 21	0.025
Pin 22	0.000
Pin 23	0.000
Pin 24	0.000
Pin 25	0.000

Time from start of test 't' (seconds)	
t1	5.10
t2	10.00
t3	15.10
t4	19.80
t5	24.70
t6	29.90
t7	35.30
t8	41.10
t9	47.30
t10	54.00
t11	61.20
t12	69.20
t13	78.20
t14	88.60
t15	100.50
t16	113.50
t17	128.00
t18	144.60
t19	164.40
t20	190.60
t21	226.30
t21	275.70
t21	0.00
t21	0.00
t21	0.00
t21	0.00
t21	0.00

Time between readings 'dt' (seconds)	
5.1	dt1 = t1
4.9	dt2 = t2- t1
5.1	dt3 = t3 - t2
4.7	dt4 =t4- t3
4.9	dt5 =t5 - t4
5.2	dt6 = t6 - t5
5.4	dt7 = t7 - t6
5.8	dt8 = t8 - t7
6.2	dt9 = t9 - t8
6.7	dt10 = t10 - t9
7.2	dt11 = t11 - t10
8.0	dt12 = t12 - t11
9.0	dt13 = t13 - t12
10.4	dt14 = t14 - t13
11.9	dt15 = t15 - t14
13.0	dt16 = t16 - t15
14.5	dt17 = t17 - t16
16.6	dt18 = t18 - t17
19.8	dt19 = t19 - t18
26.2	dt20 = t20 - t19
35.7	dt21 = t21 - t20
49.4	dt21 = t21 - t20
	dt21 = t21 - t20
	dt21 = t21 - t20
	dt21 = t21 - t20
	dt21 = t21 - t20

Total time to empty : 275.70 hour 4 minutes 35 seconds



Smartsoak	
Run off coefficient "C"	0.950
Niwa 1:100 60 Minute	42.20
Climate change factor	20%
Rainfall Intensity "I"	50.64
Area of catchment "A"	0.0086
R _c = 10 x C x I x A 4.137288 1.15 litres per second	
area of the base of the soak pit (m ²) "Asp"	1.43
soakage rate (mm/hr) from test "Sr"	10465
Soakage modified by 50% "Sr"	5233
V _{soak} = A _{sp} x S _r / 1000	7.48
Vstor = Rc – Vsoak	-3.35
Soak pit volume adjusted.	1.20

Length	1	0.715	0.715
Width	5	0.4	2
	5		

Storage capacity exceeds requirements. Design acceptable

Time sliced 20 minute & 60 Minute design confirmation:

Area of catchment "A" 0.0086
Run off coefficient "C" 0.95

Rainfall Intensity		
	20 minute	60 minute
1%AEP	77	42.2

Smartsoak	
Soak pit Base area	1.43
Soak pit volume	1.20
Soakpit depth	0.88
Adjustment	0.95

Maximum stored in 20 minute event	0.603
Maximum stored in 60 minute event	0.321

50%
27%

Maximum depth in 20 minute event	0.444	50%
Maximum depth in 60 minute event	0.236	27%

hirds_hyetographs rainfall curve	0.01332	0.01701	0.02184	0.02804	0.03578	0.04509	0.05575	0.06713	0.07816	0.08740	0.09336	0.08923	0.08233	0.07320	0.06126	0.04883	0.03755	0.02821	0.02095	0.01555	1.00000
Rainfall Intensity "I"	30.8																				
Time	20 Minute Event catchment over time in minutes (mm)																				
	Rc = 10 x C x I x A : 2.51636																				
Total M ³ to soakaway system	0.034	0.043	0.055	0.071	0.090	0.113	0.140	0.169	0.197	0.220	0.235	0.225	0.207	0.184	0.154	0.123	0.094	0.071	0.053	0.039	2.516
Depth in soakaway - mm	0.000	0.000	0.008	0.028	0.063	0.114	0.173	0.237	0.287	0.340	0.392	0.424	0.444	0.428	0.389	0.347	0.295	0.239	0.182	0.131	
Net change	0.000	0.000	0.012	0.027	0.047	0.070	0.080	0.087	0.067	0.072	0.070	0.044	0.027	-0.022	-0.052	-0.057	-0.071	-0.077	-0.077	-0.069	
Net volume	0.000	0.000	0.012	0.039	0.085	0.155	0.236	0.323	0.390	0.462	0.532	0.576	0.603	0.581	0.529	0.472	0.401	0.324	0.248	0.178	
Soakage rate mm per hour	1822	1822	1822	1822	1822	1822	2522	3436	5422	6207	6924	7564	7564	8654	8654	7564	6924	6207	5422	4546	
Soakage	0.043	0.043	0.043	0.043	0.043	0.043	0.060	0.082	0.129	0.148	0.165	0.180	0.180	0.206	0.206	0.180	0.165	0.148	0.129	0.108	2.240

Rainfall Intensity "I"	50.64																				
Time	60 Minute Event catchment over time in minutes (mm)																				
	Rc = 10 x C x I x A : 4.13729																				
Total M ³ to soakaway system	0.055	0.070	0.090	0.116	0.148	0.187	0.231	0.278	0.323	0.362	0.386	0.369	0.341	0.303	0.253	0.202	0.155	0.117	0.087	0.064	4.137
Depth in soakaway - m	0.000	0.000	0.000	0.000	0.013	0.055	0.128	0.152	0.209	0.236	0.235	0.222	0.233	0.171	0.176	0.086	0.067	0.058	0.025	0.000	
Net change	0.000	0.000	0.000	0.000	0.018	0.056	0.100	0.032	0.078	0.037	-0.001	-0.018	0.016	-0.085	0.008	-0.123	-0.025	-0.014	-0.044	-0.035	
Net volume	0.000	0.000	0.000	0.000	0.018	0.074	0.174	0.207	0.284	0.321	0.319	0.301	0.317	0.232	0.240	0.117	0.092	0.078	0.035	0.000	
Soakage rate mm per hour	1822	1822	1822	1822	1822	1822	1822	3436	3436	4546	5422	5422	4546	5422	3436	4546	2522	1822	1822	1822	
Soakage	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.246	0.246	0.325	0.388	0.388	0.325	0.388	0.246	0.325	0.180	0.130	0.130	0.130	4.228

Depth	Soakage	Modified	50%
1075	36000	18000	
1025	36000	18000	
975	35295	17648	
925	35295	17648	
875	35295	17648	
825	34616	17308	
775	33334	16667	
725	31035	15518	
675	29033	14517	
625	26866	13433	
575	25000	12500	
525	22500	11250	
475	20000	10000	
425	17308	8654	
375	15127	7564	
325	13847	6924	
275	12414	6207	
225	10844	5422	
175	9091	4546	
125	6871	3436	
75	5043	2522	
25	3644	1822	

